

**PROGRESS
VOLUME**

An Integrated Practice of Medicine

PROGRESS VOLUME

*Modern Developments in Therapeutics
and Methods of Treatment*

TO ACCOMPANY

~~~~~  
An Integrated

PRACTICE OF  
MEDICINE

By Harold Thomas Hyman, M D

~~~~~

W B SAUNDERS COMPANY

Philadelphia & London

1950

Copyright, 1950 by W B Saunders Company

Copyright under the International Copyright Union

ALL RIGHTS RESERVED

This book is protected by copyright. No part of it
may be duplicated or reproduced in any manner
without written permission from the publisher

MADE IN U S A

PRESS OF W B SAUNDERS COMPANY

PHILADELPHIA

READER'S GUIDE

This *Progress Volume* which is a supplement to *An Integrated Practice of Medicine* summarizes recent and pending contributions to the medical sciences. It covers the period between press time for the original set and the present.

In general, new material is concerned with recently devised therapeutic measures and with improved methods for specific management of the individual patient. Of newer therapeutic preparations and modalities, principal interest centers on ACTH (anterior pituitary adrenocorticotrophic hormone), adrenal cortical extract (Cortone, cortisone, compound E), Antabus, antihistamines, aureomycin, chloramphenicol (Chloromycetin), Dicumarol, heparin, suramin, sodium products used in the prevention and treatment of tuberculosis (BCG vaccine, the streptomycins, para-aminosalicylic acid and thiosemicarbazones), sulfonamides, sulfones, Terramycin, and tyrothricin.

In the descriptions of various therapeutic agencies, names of manufacturers, dosage forms, and package information are provided. It is useful to the practicing physician to know the names of manufacturers of newer drugs and the various forms in which they are available.

Despite efforts to confine recommendations to Council approved products, it has been necessary to include many useful unofficial preparations in this *Progress Volume*. Anticipation of Council action somewhat compensates for the necessary lag between delivery of manuscript and publication date. Adoption of this policy in preparation of earlier volumes of the *Integrated Practice of Medicine* enabled readers to keep ahead of many medical accomplishments without significant jeopardy since the text clearly differentiated between accepted products and those to which approval had not yet been accorded. Retention of obsolete or obsolescent preparations in listing drugs and pharmaceuticals has been adopted to give the reader a complete roster with cogent reasons why older products have been superseded by more potent and/or less toxic preparations.

With the introduction of new anti-infective agents, treatment of many frequently encountered infections has been changed. In consequence, general principles and practical management of almost all infectious diseases have been reconsidered.

In addition to fresh surveys of the management of commonly encountered clinical infections, the therapy of patients afflicted with rare microbial disease entities also has been reassessed.

For more complete understanding of the principles of therapy in infection, the reader is urged to study the *Introduction* and the collec

tive essays entitled *Allergy Adrenal Cortical Extracts and Anterior Pituitary Adrenocorticotrophic Hormones and Anti Infective Therapy*. The *Introduction* particularly describes hazards due to antithera-
peutic devices secondary to introduction of antibiotic agents the material on *Allergy* emphasizes the havoc wrought by hypersensitivity of host tissues to protoplasm of invading parasites and/or protein moieties derived from therapeutically introduced products the section devoted to *Adrenal Cortical Extracts and Anterior Pituitary Hormone* integrates the concepts of hypersensitivity and hormonal disequilibrium and suggests the boons and future potentialities of *Artificially Induced Therapeutic Hypercortinism* and finally the summary of *Anti Infective Therapy* gives body to the claim that the past two decades constitute a Golden Age of Therapeutics

Apart from reassessment of the mechanisms and management of syndromes secondary to hypersensitivity to bacteria and therapeutic agents the sections on Allergy and on Adrenal Cortical Extracts and Anterior Pituitary Hormone perform a similar service for a variety of clinical entities actually or potentially responsive to Artificial Hypercortinism

The monumental contributions to patient management in infectious and allergic diseases do not constitute isolated accomplishments of the Golden Age of Therapeutics Tremendous advances also have been registered in the treatment of neoplastic disturbances and especially in the management of various manifestations of endovascular thrombosis including the frequently encountered and menacing syndromes of phlebotrombosis thrombophlebitis coronary and cerebral occlusion and embolic accidents

In an effort to give three-dimensional coverage to clinical medicine each presentation is initiated by a summary of *General Principles of Diagnosis and Therapy* particularly emphasizing recent contributions These general statements are followed by specific details as to *Immediate Care* for guidance of the physician summoned to treat the patient at the onset of an illness At this first visit the medical practitioner projects a tentative diagnosis on the basis of presenting symptoms and signs since laboratory data are not yet available if they are to be obtained at all In an infectious disease for example immediate tentative suggestions constitute *Probatory Anti Infective Therapy* by which the patient is given the advantage of intensive treatment during the opportune moments of early invasion The practitioner orders or administers that antibiotic which in his judgment seems most likely to overcome the particular living micro-organism assumed to be the etiologic factor in the disease In situations of mild to moderate intensity and when symptoms and signs point relatively conclusively to the nature of the offending invader reliance is placed on a single antibiotic However in graver emergencies *Desperation Anti Infective*

Therapy is employed for blanket coverage of the bacterial spectrum through simultaneous use of several antibiotics. Negligible toxicity of most newer anti-infective agents permits the practice of *Desperation Anti-Infective Therapy* at minimum risk for maximum gain.

Together with *Immediate Care* of the afflicted patient the reader will note directions for household or communal prophylaxis implementing the concept that the practitioner holds the first line of defense in preventive medicine and preventable mortality.

Suggestions for *Immediate Care* are followed by those for *Continuing Care (Favorable Course)* for *Continuing Care (Unfavorable Course)* and for *Continuing Care (Progressively Unfavorable Course)*. This fluid approach to patient management recognizes the practical truth that it is not for *Calm Seas and Prosperous Voyage* that the seasoned colleague seeks assistance from the printed text. Rather he employs his library consultant when he is beset and bedeviled by difficulties, idiosyncrasies, complications and untoward events.

Under *Continuing Care (Favorable Course)* it is assumed that the tentative diagnosis has proven correct and that probatory suggestions for therapy have been successful in mitigating or eliminating presenting symptoms and signs. Under these circumstances the practitioner need only provide for maintenance of the regimen and for guidance of the patient through convalescence.

When at his return visit the practitioner finds that favorable progress has not been made, he resorts to suggestions summarized under the heading *Continuing Care (Unfavorable Course)*. Under these circumstances the tentative diagnosis may have been incorrect, the administered drug may have been given in insufficient quantity, the patient may have revealed idiosyncrasy or toxic responses, complications may have supervened, surgical indications may have arisen, or any of innumerable imponderables which go into the mechanisms of disease may have been interpolated, alike to the discomfort of patient and physician. At this time the physician necessarily must take stock. He may obtain assistance from the laboratory; it may be necessary to discontinue the originally administered drug and substitute another; he may increase the dose of the original drug or give it by another route, either intramuscularly or intravenously; he may combine the original drug with a cumulative or synergistic product; or he may concentrate on time-honored symptomatic treatment for the relief of particularly disturbing subjective manifestations.

When the physician observes a *Progressively Unfavorable Course* his ingenuity is challenged. He is required to muster all of his therapeutic equipment in order to combat the jeopardies that imperil the comfort and life of his patient. Under these circumstances he may seek consultation with a more seasoned internist or the indicated specialist; he may hazard what Hippocrates called *desperation remedies*; and

administer increasingly large doses of drugs previously employed he may resort to new remedies with which he may have had little or no previous experience or he may fortify the defenses of his patient by infusion or transfusion in order to combine all efforts to turn the tide in favor of the afflicted

In presentations of patient management the reader will observe that the Progress Volume does not pretend to absolute knowledge. The seasoned physician familiar with the many imponderables of medical practice realizes that no one individual and no group of individuals rightly can claim possession of the correct answer or knowledge of optimum therapy. An attainable goal however is that of guidance in the evolution of a satisfactory method of management for the present clinical problem as it is manifest in the individual patient.

For convenience the text of the Progress Volume is alphabetized according to principal therapeutic modalities and outstanding clinical syndromes. The former are distinguished by main side heads the latter are introduced by main center heads.

Fusion of the Progress Volume with the original set has been accomplished by continued adherence to the concepts of Integrated Medical Practice and Individualization of Patient Management by the Physician by numerous page references interpolated in the text and by inclusion in this volume of Indexes to Illustrations and Differential Diagnosis by Main Presenting Signs and Symptoms and the General Subject Index to Volumes I to IV.

Finally a separate Index to the Progress Volume also is appended distinguished by its appearance on tinted paper.

Cumulatively the indexes are master keys which open many doors. Meticulously assembled they provide the inquiring reader with immediate and complete access to text charts and illustrations of all five volumes. Intelligently used they function as guides from presenting symptom through differential diagnosis to symptomatic or specific treatment.

If the texts of the Progress Volume and of the previously published four volumes have been collected and presented as formulated they will implement the basic philosophic concepts of the biologic unity of man, the integration of medical practice and the necessarily anthropocentric approach to complete medical management. This single reference source should function as a library or desk consultant giving access to possible solutions of problems presented by individual patients. With the Integrated Practice of Medicine and its Progress Volume at hand the reader may feel secure in the knowledge that he has at his disposal a precise and concise guide to present methods of effective therapy. Moreover he should have been prepared psychologically and pharmacologically to appraise new contributions to reject the spurious and readily to include pending accomplishments in his therapeutic repertory.

HAROLD THOMAS HYMAN, M.D.

CONTENTS

| | | | |
|--|------|--|------|
| INTRODUCTION | 4133 | | |
| Therapeutic Agents* | | Clinical Syndromes | |
| Adrenal Cortical Extracts and Anterior Pituitary Adrenocorticotropic Hor- mone (ACTH) | 4143 | Actinomycosis | 4141 |
| Adrenergens | 4158 | Adrenocortical Deficiency | 4159 |
| Adrenocortical Extracts | 4160 | Aerobacter Aerogenes In- fections | 4161 |
| Adrenocorticotropic Hor- mone Anterior Pituitary (ACTH) | 4160 | Alkaligenes Fecalis Infec- tion | 4163 |
| Aerosporin | 4162 | Allergy | 4163 |
| Amebicides | 4182 | Amebiasis | 4183 |
| Analeptics | 4187 | Anaphylactic Shock | 4187 |
| Androgens | 4192 | Anthrax | 4198 |
| Antabus | 4195 | Ant Infective Therapy | 4219 |
| Anthelmintics | 4197 | Arachnidism | 4228 |
| Antibiotics | 4200 | Artificial Feeding | 4234 |
| | | Ascariasis | 4240 |
| | | Aspergillosis | 4241 |
| | | Aureomycin | 4241 |
| | | Bacterial Allergic Hyper- sensitivity | 4249 |
| | | Bacteroides Funduliformis Infection | 4250 |
| | | Balantidiasis | 4252 |
| | | Barbiturate Poisoning | 4253 |
| | | Blastomycosis | 4255 |
| | | Blood and Blood Forming Organs Neoplasms of | 4262 |
| | | Botulism | 4266 |
| | | Boutonneuse Fever | 4269 |
| | | Bronchial Asthma | 4270 |
| | | Brucellosis | 4271 |
| | | Canicola Fever | 4275 |
| | | Chancroid | 4276 |
| | | Chickenpox | 4278 |

*For reference to specific drugs see the Index to the Progress Volume p 4847

administer increasingly large doses of drugs previously employed he may resort to new remedies with which he may have had little or no previous experience or he may fortify the defenses of his patient by infusion or transfusion in order to combine all efforts to turn the tide in favor of the afflicted

In presentations of patient management the reader will observe that the Progress Volume does not pretend to absolute knowledge. The seasoned physician familiar with the many imponderables of medical practice realizes that no one individual and no group of individuals rightly can claim possession of the correct answer or knowledge of optimum therapy. An attainable goal however is that of guidance in the evolution of a satisfactory method of management for the presenting clinical problem as it is manifest in the individual patient.

For convenience the text of the Progress Volume is alphabetized according to principal therapeutic modalities and outstanding clinical syndromes. The former are distinguished by main side heads; the latter are introduced by main center heads.

Fusion of the Progress Volume with the original set has been accomplished by continued adherence to the concepts of Integrated Medical Practice and Individualization of Patient Management by the Physician, by numerous page references interpolated in the text and by inclusion in this volume of Indexes to Illustrations and Differential Diagnosis by Main Presenting Signs and Symptoms and the General Subject Index to Volumes I to IV.

Finally a separate Index to the Progress Volume also is appended distinguished by its appearance on tinted paper.

Cumulatively the indexes are master keys which open many doors. Meticulously assembled they provide the inquiring reader with immediate and complete access to text, charts and illustrations of all five volumes. Intelligently used they function as guides from presenting symptom through differential diagnosis to symptomatic or specific treatment.

If the texts of the Progress Volume and of the previously published four volumes have been collected and presented as formulated they will implement the basic philosophic concepts of the biologic unity of man and the integration of medical practice and the necessarily anthropocentric approach to complete medical management. This single reference source should function as a library or desk consultant giving access to possible solutions of problems presented by individual patients. With the Integrated Practice of Medicine and its Progress Volume at hand the reader may feel secure in the knowledge that he has at his disposal a precise and concise guide to present methods of effective therapy. Moreover he should have been prepared psychologically and pharmacologically to appraise new contributions, to reject the spurious and speedily to include pending accomplishments in his therapeutic repertoire.

HAROLD THOMAS HYMAN, M.D.

| Therapeutic Agents | | Clinical Syndromes | |
|------------------------------------|------|---|------|
| Bacteriophage | 4250 | Erysipelas | 4320 |
| | | Erysipeloid | 4322 |
| BAL | 4251 | Erythema Induratum | 4322 |
| | | Erythema Multiforme Exu dativum | 4323 |
| Bismuth | 4255 | Erythema Nodosum | 4324 |
| | | Female Reproductive Sys tem Neoplasms of | 4326 |
| Blood and Serum | 4257 | Filariasis | 4327 |
| | | Food Allergy | 4329 |
| | | Foot and Mouth Disease | 4329 |
| Camoquin | 4274 | Frambesia | 4330 |
| | | Fungus Infections | 4333 |
| | | Fusospirochetosis | 4338 |
| Carinamide (Staticin) | 4275 | Gas Gangrene | 4341 |
| | | Geotrichosis | 4345 |
| Chenopodium Oil of | 4278 | Giardia is | 4345 |
| | | Glanders | 4346 |
| | | Gonococcal Infections | 4349 |
| Chloramphenicol | 4279 | Granuloma Inguinale | 4353 |
| | | Habitual Abortion | 4354 |
| | | Herpes Simplex | 4355 |
| Chlorguanide · Hydrochlo ride | 4281 | Herpes Zoster | 4355 |
| | | Histoplasmo is | 4356 |
| | | Hodgkin s Disease | 4357 |
| Chlorophyll | 4282 | Homologous Serum Jaun dice | 4358 |
| | | Hypertension Es ential | 4360 |
| Chloroquine · Diphosphate N N R | 4283 | Immunization and Chemo prophylaxis | 4362 |
| | | Inclusion Conjunctivitis | 4368 |
| Circulin | 4288 | Infectious Leukopenia | 4368 |
| | | Infectious Lymphocytosis | 4368 |
| | | Infectious Mononucleosis | 4369 |
| Cortisone Cortone | 4297 | Infectious Polyneuritis | 4369 |
| | | Influenza (Hemophilus) In fection | 4370 |
| DDT | 4297 | Influenza Virus Infections | 4372 |

| Therapeutic Agents | | Clinical Syndromes | |
|--------------------------------------|------|--|------|
| Anticoagulant Drugs | 4200 | Cholera | 4284 |
| | | Chorea | 4287 |
| | | Chromoblastomycosis | 4287 |
| Antigens | 4204 | Clonorchiasis | 4288 |
| | | Coccidioidomycosis | 4289 |
| | | Collagen Diseases | 4290 |
| Antihistamines | 4210 | Colon Bacillus Infections | 4291 |
| | | Colorado Tick Fever | 4293 |
| | | Common Cold | 4294 |
| Antimalarials | 4222 | Conjunctivitis | 4296 |
| | | Contact Atopy | 4297 |
| Antimonials | 4222 | Dengue and Dengue Like Fevers | 4298 |
| | | Dermatitis Herpetiformis | 4299 |
| | | Dermatomyositis | 4299 |
| Antitubercular Cytotoxic Serum (ACS) | 4226 | Dermatophytosis | 4300 |
| | | Digestive System Neoplasms of | 4300 |
| Antivenin Crotalus | 4227 | Diphtheria | 4302 |
| | | Dracontiasis | 4306 |
| | | Drug Allergy | 4306 |
| | | Echinococcosis | 4307 |
| Antivenin (Latrodectus Mactans) | 4227 | Encephalitis (Encephalopathy) of Post Infectious or Post Vaccinal Origin | 4307 |
| | | Encephalitis Epidemic | 4308 |
| Antrycide | 4227 | Encephalitis Equine | 4309 |
| | | Encephalitis Japanese B | 4310 |
| | | Encephalitis St Louis | 4310 |
| Arsenicals | 4230 | Encephalomyocarditis | 4311 |
| | | Endocarditis Atypical Verrucous | 4311 |
| Bacillomycin | 4247 | Endocarditis Subacute Bacterial | 4313 |
| | | Endocrines Neoplasms of | 4316 |
| Bacitracin | 4247 | Eosinophilic Pneumonitis | 4318 |
| | | Epidemic Keratoconjunctivitis | 4319 |
| Bactericides | 4249 | Epidemic Pleurodynia | 4320 |

| Therapeutic Agents | | Clinical Syndromes | |
|---|------|--|------|
| Isopentaquine Oxalate | 4379 | Myasthenia Gravis | 4425 |
| | | Mycoses | 4426 |
| Isuprel | 4380 | Myeloma Multiple | 4426 |
| | | Neoplasm | 4426 |
| | | Nervous System Neoplasms of | 4438 |
| Litmocidin | 4388 | Newcastle Virus Disease (Human) | 4439 |
| LL-47 | 4388 | Onchocerciasis | 4441 |
| | | Ornithosis | 4441 |
| | | Oxyuriasis | 4443 |
| Mandelic Acid | 4399 | Paragonimiasis | 4445 |
| | | Pediculosis | 4446 |
| Mercury | 4413 | Penicilliosis | 4460 |
| | | Peri Arteritis Nodosa | 4460 |
| | | Periodic Disease | 4461 |
| Methenamine | 4413 | Pertussis | 4462 |
| | | Physical Allergy | 4465 |
| | | Pinta | 4465 |
| Morphine Derivatives and Synthetic Substitutes | 4415 | Pityriasis Rosea | 4465 |
| | | Plague | 4466 |
| | | Pneumococcal Infections | 4468 |
| Muscle Relaxants | 4418 | Poliomyelitis | 4470 |
| | | Pollinosis | 4477 |
| | | Polycythemia | 4479 |
| Nitrogen Mustard | 4439 | Proteus Vulgaris Infections | 4482 |
| | | Pseudomona Aeruginosa (B Pyocyaneus) Infec tions | 4482 |
| Orthoxine Hydrochloride | 4442 | Psoriasis | 4483 |
| | | Psychogenic Allergy | 4484 |
| Oxyquinolines | 4442 | Q Fever | 4484 |
| | | Rabies | 4487 |
| Pamaquin Naphthoate | 4444 | Rat Bite Fever | 4490 |
| | | Relapsing Fever | 4491 |
| Para Aminobenzoic Acid (PABA) | 4445 | Respiratory System Neo plasms of | 4492 |
| | | Rheumatic Fever | 4493 |

| Therapeutic Agents | | Clinical Syndromes | |
|-----------------------------|------|-----------------------------------|------|
| Diazene | 4300 | Jaundice | 4380 |
| | | Klebsiella | 4380 |
| Diuretics | 4305 | Koch Weeks Conjunctivitis | 4382 |
| | | Laboratory Procedures | |
| | | Simplified | 4382 |
| Estrogens | 4325 | Lambliasis | 4385 |
| | | Leishmaniasis | 4385 |
| | | Leprosy | 4386 |
| Fumigacin | 4331 | Leukemia Acute | 4387 |
| | | Leukemia Chronic Lymphatic | 4387 |
| Fungicides | 4331 | Leukemia Chronic Myeloid | 4387 |
| | | Listeria Monocytogenes Infections | 4387 |
| Gamma Globulin Fraction | 4339 | Loiasis | 4388 |
| | | Lupus Erythematosus Acute | |
| Gantrisin (NU 445) | 4340 | Disseminated | 4388 |
| | | Lupus Erythematosus Chronic | 4389 |
| Garlicin | 4340 | Lupus Vulgaris | 4390 |
| | | Lymphocytic Choriomenitis | 4390 |
| Gastric Antacids | 4343 | Lymphopathia Venereum | 4391 |
| | | Maduromycosis | 4392 |
| Gentian Violet | 4345 | Malaria | 4392 |
| | | Male Reproductive System | |
| Gold | 4346 | Neoplasms of | 4399 |
| | | Measles | 4400 |
| | | Melioidosis | 4401 |
| Hexylresorcinol | 4356 | Meningococcal Infections | 4408 |
| | | Menstruation Ovulation and | |
| Hyaluronidase | 4359 | Impregnation | 4411 |
| | | Molluscum Contagiosum | 4413 |
| | | Moniliasis | 4413 |
| Insecticides and Fungicides | 4373 | Morax Axenfeld Conjunctivitis | 4414 |
| | | Mumps | 4417 |
| Iodide | 4377 | Mushroom Poisoning | 4424 |
| | | Muscle (Shellfish) Poisoning | 4424 |
| Isoniazid Sulfate | 4379 | | |

| Therapeutic Agents | | Clinical Syndromes | |
|--------------------------------|------|-----------------------------------|------|
| Spirochetocides | 4527 | Thrombosis Coronary | 4583 |
| | | Tick Bite Fever | 4587 |
| | | Torulosis | 4587 |
| STB | 4532 | Toxoplasmosis | 4588 |
| | | Trachoma | 4583 |
| Sterogyl | 4533 | Trench Fever | 4590 |
| | | Treponematoses | 4590 |
| Streptomycin | 4539 | Trichinosis | 4591 |
| | | Trichomonas Enterocolitis | 4591 |
| | | Trichomonas Vaginitis | 4592 |
| Sulamyd (Sulfacetamide Sodium) | 4540 | Trichuriasis | 4593 |
| | | Trypanosomiasis | 4594 |
| Sulfonamides | 4540 | Tsutsugamushi Fever | 4596 |
| | | Tuberculosis | 4597 |
| | | Tularemia | 4619 |
| Sulfones | 4552 | Typhoid Fever | 4620 |
| | | Typhus Fever | 4621 |
| | | Uncinariasis | 4623 |
| Sulphetrone | 4553 | Urethritis Non Specific | |
| | | Non Gonococcal | 4625 |
| Suramin Sodium U S P | 4553 | Urinary System Neoplasms of | 4627 |
| | | Urine Pigmentary Changes in | 4628 |
| Terramycin | 4562 | Urticaria and Angioneurotic Edema | 4630 |
| | | Vaccinia | 4631 |
| Tetrachlorethylene | 4569 | Venezuelan Equine Encephalitis | 4632 |
| Thalamyd | 4569 | Vernal Conjunctivitis | 4632 |
| | | Verruga Peruana | 4632 |
| | | Virus Dengue | 4633 |
| Thymol | 4586 | Virus Dysentery | 4634 |
| | | Virus Hepatitis | 4635 |
| Tyrothricin | 4622 | Virus Pneumonitis | 4636 |
| | | Visceral Angitis | 4638 |
| | | The Xiphosternal Crunch | 4638 |
| Urinary Antiseptics | 4625 | Yellow Fever | 4638 |

| Therapeutic Agents | | Clinical Syndromes | |
|--------------------------------|------|--------------------------------------|------|
| Pelletherine Tannate | 4447 | Rheumatoid Arthritis | 4502 |
| | | Rhinoscleroma | 4505 |
| Penicillin | 4447 | Rhino-sporidiosis | 4505 |
| | | Rickettsialpox | 4506 |
| | | Rocky Mountain Spotted Fever | 4507 |
| Pentaquine (SN 13276) | 4460 | Rubella | 4509 |
| | | Russian Forest Spring Dis- ease | 4510 |
| Placental Immune Glo- bulin | 4466 | Salmonellosis | 4511 |
| | | Sandfly Fever | 4512 |
| Polymyxin | 4480 | Sarcoidosis | 4512 |
| | | Scabies | 4514 |
| | | Scarlet Fever | 4515 |
| Promin | 4481 | Schistosomiasis | 4516 |
| | | Serum Allergy | 4519 |
| | | Shigellosis | 4520 |
| Promizole | 4482 | Sixth Disease | 4522 |
| | | Skeletal System Neoplasms of | 4522 |
| Quinacrine | 4485 | Smallpox | 4523 |
| | | Snake Bite | 4523 |
| | | Spirochetal Jaundice | 4527 |
| Quinine Ethyl Carbonate | 4485 | Sporotrichosis | 4528 |
| | | Staphylococcal Infections | 4528 |
| Quinine | 4486 | Streptococcal Infections | 4533 |
| | | Streptococcal Sore Throat | 4538 |
| | | Strongyloidiasis | 4539 |
| Salicylate | 4511 | Syphilis | 4554 |
| | | Tegumentary System Neo- plasms of | 4559 |
| Scabicides | 4513 | Teniasis | 4561 |
| | | Tetanus | 4564 |
| | | Thrombo Angitis Obliter- ans | 4570 |
| Sedatives and Hypnotics | 4518 | Thrombosis and Emboliza- tion | 4570 |
| | | Thrombosis Cerebral | 4581 |
| Silver | 4522 | | |

INTRODUCTION

In the years which followed the publication of the Integrated Practice of Medicine concepts and terminology concerning allergy (hyper sensitivity) have changed to a considerable degree. Although Allergy will be dealt with at length under that heading it seems appropriate to discuss here in general terms phenomena like histamine type and tuberculin type hypersensitivity, bacterial resistance, antitherapeutic factors and drug allergens—disease conditions and factors which will be encountered frequently throughout this volume.

MICROBIC IMMUNITY (BACTERIAL FASTNESS TO ANTIBIOTICS)

The practitioner has first hand familiarity with the development of bacterial resistance to anti-infective agents. Shortly after introduction of sulfonamide, most clinicians noted a progressively diminishing cure rate in statistical studies of gonorrheal urethritis. In the laboratory this disquieting observation was proven to be the result of development by the micro-organism of active immunity to the therapeutic agent.

The phenomenon of sulfonamide fastness exhibited by gonococci unfortunately proved neither an unique nor an infrequent antitherapeutic reaction. A principal difficulty attending the conquest of the tubercle bacillus by the streptomycins is that of acquired immunity to the antibiotic as shown by development of a not insignificant percentage of treatment resistant acid fast invaders.

In the macrocosm occurrence of this antitherapeutic property is observed in the reactions of the common housefly to insecticides containing DDT. Approximately 5% of the pests and potential vectors of disease become DDT fast and what is worse they propagate a race of offspring that inherits this same antitherapeutic property.

Quite likely bacterial fastness or resistance is a universal biological phenomenon exhibited in greater or lesser degree to all anti-infective agents. To the best of present knowledge microbic active immunity develops most prominently on exposure to sulfonamide and streptomycin, less so to penicillin and seemingly least of all to aureomycin, bacitracin and chloramphenicol.

Elsewhere the relationship between the mechanisms of active immunity and hypersensitivity is fully discussed (p. 4165). At this point it is sufficient to note that the bacteria (streptococci, tubercle bacilli) most capable of developing active immunity to antibiotics are also most likely to produce hypersensitivity phenomena in the human host. An exception to this general rule is the gonococcus which though it rapidly becomes sulfonamide fast does not appear to produce significant histamine type or tuberculin type hypersensitivities in man.

Specificity. At least six observations pertinent to acquired bacterial immunity have practical implications.

| | |
|---|------|
| INDEX OF SIGNS AND SYMPTOMS (Volumes I to V) | 4643 |
| GENERAL SUBJECT INDEX (Volumes I to IV) | 4661 |
| INDEX OF ILLUSTRATIONS (Volumes I to V) | 4827 |
| INDEX TO THE PROGRESS VOLUME (Volume V) | 4847 |

clinician is familiar with the first of these particularly in trichinosis where initial clinical manifestations include angioneurotic edema and eosinophilia the second and more serious tuberculin type reaction is especially illustrated by the rheumatic fever syndrome following sensitization of the patient to the bacterial protein of invading streptococci (p 4493)

Acute Histamine-type Hypersensitivity to Bacterial Allergen

In acute histamine type reactions to bacterial allergen the tissue response occurs shortly after exposure to the microbe The ensuing reaction is characterized by increased vessel permeability edema eosinophilia and spasm of smooth muscle Anaphylactic antibody is demonstrable in circulating blood and is transferable to the experimental animal (Prausnitz Kustner reaction) histamine injection partially recreates the hypersensitivity syndrome and antihistamines afford palliation

Chronic Tuberculin type Hypersensitivity to Bacterial Allergen

Bacterial hypersensitivity also may be manifested by a more insidious and chronic process of which the tuberculin reaction is the prototype In tuberculin type hypersensitivities after a period of incubation diffuse pathological changes are encountered with principal involvement of collagen interstitial tissues and vascular endothelium of peripheral vessels endocardium and myocardium Resultant lesions are manifested in skin (urticaria purpura erythema etc) articular structures (arthralgia rheumatic fever rheumatoid arthritis etc) serous membranes (hydropericardium hydroperitoneum hydrothorax etc) kidneys (postscarlatinal nephritis) the nervous system (aseptic meningitis chorea nonsuppurative meningitides peripheral neuritis etc) endocardium (vegetations followed by scarring and valvular defects) myocardium (Aschoff bodies Anitschkow myocyte etc) and peripheral arteries (peri arteritis nodosa thrombo angitis obliterans etc)

In tuberculin type hypersensitivity anaphylactic antibody is not demonstrable in circulating blood passive transfer cannot be demonstrated histamine injection does not reproduce the symptom complex antihistamines do not afford palliation but cortisone (Compound E) offers rich promise of effective symptomatic relief

Allergic Hypersensitivity Reactions to Bacterial Allergen vs Bacterial Inflammation

Clinically Bacterial Hypersensitivity and Bacterial Inflammation often are indistinguishable unless organisms are demonstrable in local lesions or in the blood stream Therapeutically antibiotics have curative potential in inflammatory reactions but additional sensitizing hazard in the allergies

When patients exhibit simultaneous manifestations of bacteremia toxemia and bacterial hypersensitivity differentiation is utterly impossible except through the therapeutic test of determining residual manifestations following effective antibiotic therapy When as in rheumatic

1 *Fastness* is bacteriologically selective applying to some but not all microbic strains

2 *Bacterial fastness* is also selective with regard to anti infective agents sulfonamide fast gonococci are penicillin sensitive many streptomycin fast tubercle bacilli are dihydrostreptomycin sensitive and vice versa

3 The resistance of *fast bacterial strains* is relative and not absolute Hence in acute infections the therapist is justified in the use of wastefully profligate loading or priming doses to overwhelm even the most stubborn invader

4 In chronic disease if the experience with streptomycin is generic there is a relationship between drug dose and active development of *bacterial immunity* Daily amounts in excess of 1 gm of streptomycin and courses of treatment extending beyond six weeks appear to invite fastness whereas a schedule which calls for 0.5 to 1 gm daily for forty two days seems to produce minimum microbic immunity without significant loss of therapeutic efficacy

5 There appears to be a direct relationship between development of *bacterial immunity* and *virulence* Patients whose organisms develop streptomycin resistance simultaneously experience clinical deterioration The appearance of *bacterial fastness* is prognostically ominous

6 *Fastness* is a property of the *microbe* not of the host Transmission of a streptomycin resistant tubercle bacillus from streptomycin treated patient to contact results in acquisition by the latter of a treatment resistant organism attesting to the grave menace of incomplete or uncontrolled therapy

Therapeutic Countermeasures The therapist has three potent measures with which to combat the antitherapeutic properties of acquired microbic resistance The first in the treatment of *acute* disease is the delivery of a massive and overpowering initial loading or priming dose precluding survival of even the hardiest subspecies of the bacterial invaders the second is substitution of another effective antibiotic agent as for example penicillin for sulfonamide dihydrostreptomycin for streptomycin and vice versa the third in *chronic* disease is the use of a time dose schedule devised to produce maximum therapeutic effect with minimum development of bacterial immunity

HYPERSENSITIVITY OF THE HOST TO BACTERIAL ANTIGEN

Bacterial and other invading micro organisms primarily damage the host by *actual invasion* (abscess carbuncle bacteremia etc) and/or by *toxin formation* and its release (diphtheria tetanus botulism etc)

Invasion of the Hypersensitive Individual Pathogens may cause tissue damage and death by acting as offending allergens in the manner of pollen in hay fever serum in anaphylactic shock strawberries in digestive urticaria milk and its products in infantile eczemas poison ivy in dermatitis venenata etc (p 3330)

Bacterial hypersensitivity just as other allergic phenomena may be manifested clinically as *acute histamine type* or *chronic tuberculin type* reactions elsewhere described in greater detail (p 4166) The

To the clinician the most alarming aspect of hypersensitivity is the possible injury he may unwittingly inflict on the patient whose tissues respond to introduction of the intended therapeutic agent by these perverse allergic manifestations. Under these abnormal conditions an Unholy Alliance is established between invader and therapeutic agent. The latter functions insidiously as a traitorous fifth columnist menacing the very patient whom the physician seeks to help.

Histamine type Hypersensitivity Reactions to Therapeutic Agents

The clinician is abundantly familiar with both histamine type and tuberculin type hypersensitivity manifestations resulting from introduction of therapeutic allergens. Thus an appreciable number of patients given serum or penicillin sooner or later develop a dermatosis (usually an urticaria) with or without drug fever and eosinophilia. Usually there is little difficulty in recognizing the mechanism of these untoward manifestations which fortunately have only nuisance value and either abate spontaneously or respond to antihistamine.

Tuberculin type Hypersensitivity Reactions to Therapeutic Agents

Until recently tuberculin type hypersensitivities to anti-infective agents were not as obvious as histamine like responses. The works of Rich and other investigators in this field have accentuated these basic precepts:

1. Tuberculin type hypersensitivity (with many clinical features of peri-arteritis nodosa, rheumatoid arthritis, rheumatic fever, etc.) may be produced by injection of Heterologous Serum (p. 4167).

2. Tuberculin type hypersensitivity may be produced by administration of nonprotein drugs such as iodide, salicylate, sulfonamide and presumably each and every anti-infective agent.

3. Treatment of bacterial hypersensitivity with potentially sensitizing anti-infective agent may result in worsening of clinical manifestations and even death of host. Thus anti-infective agents prescribed or injected therapeutically may paradoxically prove damaging or even lethal to hypersensitive patients.

The Combined Syndromes of Hypersensitivity Reactions Due to Bacterial and Therapeutic Allergens

In the presence of histamine type or tuberculin type hypersensitivities resulting from bacterial antigen, the use of potentially sensitizing anti-infective agents may produce the following complicated symptom complex, always disturbing and occasionally lethal:

- a) Manifestations of microbic invasion and toxemia (fever, leukocytosis, bacteremia, local inflammation, etc.)
- b) Manifestations of histamine type hypersensitivity to Microbic Antigen (fever, urticaria, eosinophilia, etc.)
- c) Manifestations of tuberculin type hypersensitivity to Microbic Antigen (sterile dermatoses, endocarditis, peripheral vascular lesions, etc.)

fever the phases of bacterial invasion and toxemia are terminated by the time the phase of bacterial hypersensitivity starts differential diagnosis is simpler and therapeutic indications are more precise

Therapeutic Implications

Present interpolation of the confusing topic of Bacterial Hypersensitivity would be gratuitous were it not for the fact that recognition of microbic allergy is essential to intelligent conduct of therapy Succinctly stated the complication of hypersensitivity in any clinical syndrome resulting from or associated with bacterial invasion alters practical management in keeping with the following concepts

1 Antibiotic agents are of no value in controlling clinical manifestations due to acute histamine type and chronic tuberculin type hypersensitivity This principle is best illustrated by the disappointing results of sulfonamide and penicillin therapy in phase III of the rheumatic fever syndrome despite the etiologic relationship of the disease to an antibiotic sensitive organism (hemolytic streptococcus)

2 The patient who exhibits hypersensitivity to one antigen may exhibit hypersensitivity to others Hence introduction of an antibiotic agent exposes the hypersensitive patient to another potential allergen This in turn may produce additional hypersensitivity Illustrative of this practitioners have long noted clinical deterioration in certain patients afflicted with deep fungus infections or tuberculosis when iodides were given and worsening of the rheumatic fever syndrome may follow use of sulfonamides (p 4179)

3 On the basis of negative therapeutic results and potential allergic damage antibiotics are not only not indicated in the treatment of clinical manifestations due to bacterial hypersensitivity *they are actually contraindicated*

4 Once recognized manifestations of bacterial hypersensitivity merit treatment with antihistamines Histamine type manifestations should abate particularly if the bacterial invader has been eliminated and tuberculin type manifestations may be prevented Later when cortisone (Compound E) becomes available tuberculin type phenomena may be reversed as in rheumatoid arthritis

HYPERSENSITIVITY REACTIONS OF THE HOST TO DRUGS AND ANTIBIOTIC AGENTS

Attention has been previously drawn to these paradoxes

A Powerful antibiotics (penicillin streptomycin etc) may be derived from potentially invasive micro organisms (penicillium notatum actinomyces) (p 547)

B Perversions of mechanisms of defense may cause serious and even fatal consequences to the host (anaphylactic shock serum sickness) (p 548)

Present attention is focused on a third and related paradox e g

C Exposure of the hypersensitive host to potent anti infective agents may result in histamine type or tuberculin type hypersensitivities

of therapy weighing the potential hazard of hypersensitivity phenomena against possible anti infective responses

5 Concurrently with most anti infective agents *administer anti histamines* If this substance does nothing else it tends to prevent, or at least palliate manifestations of histamine type hypersensitivity whether due to bacterial antigen or to allergen derived from therapeutic agent.

6 In the management of any infection involving the *hypersensitive patient administer antihistamine prophylactically* hoping to ease if not prevent histamine type hypersensitivities and perhaps lessen the tendency to later development of tuberculin type hypersensitivity

7 In the management of any disease caused by *microbes of high enslizing potential* (streptococci M tuberculosis etc) *give anti histamine to prevent or palliate histamine type hypersensitivities* and perhaps later tuberculin type hypersensitivities

8 *Continue administration of antihistamine for at least two weeks after potentially sensitizing antigens have been eliminated* (discontinuance of anti infective agent abatement of microbic activity)

9 In intervals of respite (as Phase II of the rheumatic fever syndrome) *attempt to prevent exacerbations by systematic use of a feebly sensitizing but powerfully bactericidal anti infective agent* (penicillin) *together with antihistamine*

10 When commercially available consider use of anterior pituitary adrenocorticotrophic hormone or of cortisone to palliate and perhaps prevent chronic tuberculin type hypersensitivity reactions

INCREASED COAGULABILITY OF THE BLOOD

The blood of patients receiving penicillin streptomycin and aureomycin clots more rapidly than normally Thus within 75 minutes after oral administration of aureomycin the coagulation time of cats is reduced from eleven minutes to four minutes A single capsule containing 250 mg of aureomycin reduces the coagulation time of human blood from eight to five minutes

Practical application of this antitherapeutic effect of the antibiotic is seen in the increase in the complications of phlebothrombosis and embolization when penicillin and aureomycin particularly are used for the prevention or active treatment of postoperative infection Particularly in known thrombophiles (p 4571) the practitioner must consider the hazard of antibiotic and weigh this factor against potential benefits If it is decided that antibiotic is to be administered then early ambulation is the more urgently required in order to prevent serious intravascular complications and difficulties

SUMMARY

In the fascinating biological conflict between human host and hostile microbic foe the battle lines are drawn according to the following schematic pattern

d) Manifestations of histamine type hypersensitivity to Therapeutic Allergen (fever dermatoses eosinophilia etc)

e) Manifestations of tuberculin type hypersensitivity to Therapeutic Allergen (toxicoderms vascular lesions resembling periarteritis and endocarditis sterile effusions etc)

Confirmation of these experimental data is afforded clinically by observed deterioration in rheumatic fever on prescription of sulfonamide by the flare up that may occur when iodide is administered to certain patients with tuberculosis and deep fungous infections by ten fold increase in the incidence of a fatal peri arteritis nodosa at the Johns Hopkins Hospital in the decade following introduction of sulfonamide therapy (p 4179)

Therapeutic Implications

In the light of modern knowledge bacterial and therapeutic sensitivity reactions have a great deal more than academic significance. Unless clearly assessed at their proper valuations bacterial hypersensitivities (particularly of the tuberculin type varieties) may produce crippling and even fatal disturbances. The therapist who fails to comprehend the pathogenesis of the condition under consideration may add fuel to the fire by superimposing hypersensitivity phenomena resulting from his prescription of supposedly therapeutic agents as for example sulfonamides in rheumatic fever. Contrariwise the astute and complete practitioner with keen awareness of the complexity of bacterial invasion and of mechanisms of therapeutics supplements the miracles of anti infective therapy with measures aimed to prevent and palliate hypersensitivity phenomena whether caused by invading microorganism or potential anti infective therapeutic agent.

Until such time as there is available greater knowledge of hypersensitivity the undernoted guiding principles are recommended for serious consideration.

1 In the treatment of infection when the invading microbe is susceptible to several antibiotics choose an anti infective agent of feeble sensitizing potential (penicillin) rather than one of seemingly greater sensitizing potential (sulfonamide)

2 In the treatment of infections especially in hypersensitive patients avoid anti infective agents of feeble or dubious antimicrobial activity especially if these substances are potentially sensitizing antigens (iodide salicylate gold etc)

3 If the patient gives a personal or family history of hypersensitivity (hay fever dermatitis venenata from poison ivy hives from digestants asthma etc) of previous hypersensitivity to anti infective agents (drug fever toxicoderm serum sickness etc) and if there are objective evidences of hypersensitivity phenomena (eczema purpura erythema etc) weigh the potential hazard of hypersensitization to the therapeutic agent against its possible anti infective capacity.

4 If the patient develops evidences of hypersensitivity to the therapeutic agent during anti infective treatment consider discontinuance.

of therapy weighing the potential hazard of hypersensitivity phenomena against possible anti infective responses

5 Concurrently with most anti infective agents *administer anti histamines* If this substance does nothing else it tends to prevent or at least palliate manifestations of histamine type hypersensitivity whether due to bacterial antigen or to allergen derived from therapeutic agent

6 In the management of any infection involving the *hyper.sensitive patient administer antihistamine prophylactically* hoping to ease if not prevent histamine type hypersensitivities and perhaps lessen the tendency to later development of tuberculin type hypersensitivity

7 In the management of any disease caused by *microbes of high sensitizing potential* (streptococci, M. tuberculosis etc) *give anti histamine to prevent or palliate histamine type hyper.sensitivities* and perhaps later *tuberculin type hypersensitivities*

8 *Continue administration of antihistamine for at least two weeks after potentially sensitizing antigens have been eliminated* (discontinuance of anti infective agent abatement of microbic activity)

9 In intervals of respite (as Phase II of the rheumatic fever syndrome) *attempt to prevent exacerbations by systematic use of a feebly sensitizing but powerfully bactericidal anti infective agent* (penicillin) *together with antihistamine*

10 When commercially available consider use of anterior pituitary adrenocorticotrophic hormone or of cortisone to palliate and perhaps prevent chronic tuberculin type hypersensitivity reactions

INCREASED COAGULABILITY OF THE BLOOD

The blood of patients receiving penicillin, streptomycin and aureomycin clots more rapidly than normally Thus within 75 minutes after oral administration of aureomycin the coagulation time of cats is reduced from eleven minutes to four minutes A single capsule containing 250 mg of aureomycin reduces the coagulation time of human blood from eight to five minutes

Practical application of this antitherapeutic effect of the antibiotic is seen in the increase in the complications of phlebothrombosis and embolization when penicillin and aureomycin particularly are used for the prevention or active treatment of postoperative infection Particularly in known thrombophiles (p 4571) the practitioner must consider the hazard of antibiotic and weigh this factor against potential benefits If it is decided that antibiotic is to be administered then early ambulation is the more urgently required in order to prevent serious intravascular complications and difficulties

SUMMARY

In the fascinating biological conflict between human host and hostile microbic foe the battle lines are drawn according to the following schematic pattern

| <i>Host</i> | <i>Microbic Invader</i> |
|------------------------------------|--|
| Natural Active Immunity (p 76) | Bacterial Body |
| + | + |
| Natural Passive Immunity (p 73) | Bacterial Toxin |
| + | + |
| Artificial Active Immunity (p 75) | Bacterial Fastness (Microbic Immunity) |
| + | + |
| Artificial Passive Immunity (p 75) | Hypersensitivity to Microbic Antigen |
| + | + |
| Antibiotic Agents | Hypersensitivity to Therapeutic Allergen |

The e then are the pieces in what may be a game of mortal conflict. Each factor is an imponderable for as yet medicine has no laboratory yardstick by which to measure the power of each constituent. The apotheosis of the art of medicine is best exhibited in the practitioner's interpretation of presenting symptoms and in the manner in which he utilizes the varied therapeutic modalities to overcome the microbic invader and suppress or minimize antitherapeutic hazards.

ACTINOMYCOSIS

[Lumpy Jaw Nocardiosis Streptothricosis]

Principles of Diagnosis and Treatment

1 Establish diagnosis by spread, or cultures (Fig 75A p 486 and p 492)

2 Inasmuch as actinomycosis is a relatively rare disease few writers have sufficiently extensive experience to speak authoritatively of therapeutic endeavors. The practitioner treating an occasional infection proceeds tentatively, carefully observes effects of therapy, prepares to make changes if indicated and seeks consultation with specialists when necessary.

3 Remember that actinomycosis is an insidious disease (p 489) hence treatment must be vigorous and sustained. Even when the primary lesion appears sharply localized (Fig 965 p 3310) latent pulmonary (Fig 77 p 491) and abdominal metastases later may produce chronic illness and/or death.

4 Actinomyces vary greatly in susceptibility to antibiotics. Most strains exhibit some sensitivity to penicillin, sulfonamides and the streptomycins. To be effectual, anti-infective therapy must be pursued intensively with combinations of several available agencies.

Practical Management

Immediate Care

1 Arrange for admission to a hospital equipped to handle communicable disease unless patient can be isolated at home under professional nursing supervision. Warn attendants of infectivity of dressings and sputum.

2 In addition to routine physical and laboratory examinations, x-ray chest to detect current lesions and for comparison with later films.

3 Order high-calorie diet (p 671) with multivitamin supplementation.

4 Consider surgical extirpation and curettage preferably under general anesthesia if primary lesion can be excised without significant disability or disfigurement.

5 Contact National Institute of Health, Bethesda, Maryland for actinomycosis vaccine, not commercially available. When obtained, inject intracutaneously 0.1 cc for test of skin sensitivity. Read at 24 and 48 hours. Interpret as positive an area of erythema in excess of 2 cm. In the hypersensitive, defer use of iodide or irradiation until desensitization has been accomplished (p 4190).

6 Inject intramuscularly a priming dose of at least 1,200,000 units of procaine penicillin in aqueous suspension (p 4453).

7 Administer orally 2 gm each of sulfadiazine and sulfamerazine

| <i>Host</i> | <i>Microbic Invader</i> |
|------------------------------------|--|
| Natural Active Immunity (p 76) | Bacterial Body |
| + | + |
| Natural Passive Immunity (p 73) | Bacterial Toxin |
| + | + |
| Artificial Active Immunity (p 75) | Bacterial Fastness (Microbic Immunity) |
| + | + |
| Artificial Passive Immunity (p 75) | Hypersensitivity to Microbic Antigen |
| + | + |
| Antibiotic Agents | Hypersensitivity to Therapeutic Allergen |

These then are the pieces in what may be a game of mortal conflict. Each factor is an imponderable for as yet medicine has no laboratory yardstick by which to measure the power of each constituent. The apotheosis of the art of medicine is best exhibited in the practitioner's interpretation of presenting symptoms and in the manner in which he utilizes the varied therapeutic modalities to overcome the microbic invader and suppress or minimize antitherapeutic hazards.

■ If iodide is not tolerated orally substitute inhalations of ethyl iodide using apparatus of Burnham or Warren Collens (p 4378) Start with 0.2 cc thrice daily Increase by increments of 0.1 cc until full dose of 1 cc is tolerated

Continuing Care (Progressively Unfavorable Course)

1 Maintain or increase penicillin levels by use of larger doses of aqueous procaine penicillin G or by substitution of suspension in oil with aluminum monostearate

2 Increase streptomycin to 1 gm thrice daily

3 Continue antihistamine vaccine and aerosolization

4 Substitute sulfones for sulfonamides Start with promizole as in leprosy (p 4386) with initial daily dose of 0.5 gm in capsule form Increase daily dose by increments of 0.5 gm to total 6 to 8 gm daily closely watching hemogram Inject daily 1 cc of liver extract Group and cross match for transfusion if erythrocytes fall below 3 000 000 or hemoglobin is less than 7.5 gm

5 Substitute diasone for promizole Give 0.9 gm daily for first week Increase daily dose to 1.2 gm for second week and to 1.5 gm thereafter unless toxicity is encountered (p 4552) Interrupt diasone therapy for two weeks every two months

6 If sulfones appear ineffectual or toxic try thymol Start with 300 mg thrice daily Add 300 mg each day if tolerated (p 4586) to daily total dose of 2.1 gm

7 Consult surgeon for radical operative intervention Consider (a) excision of sinus tract (b) lobectomy if pulmonary lesions are localized (c) laparotomy for drainage of peritoneal abscesses etc

ADRENAL CORTICAL EXTRACTS AND ANTERIOR PITUITARY ADRENOCORTICOTROPIC HORMONE [ACTH]

Until the monumental clinical researches of Philip Hench interest in adrenal cortical extracts and anterior pituitary adrenocorticotrophic hormone centered on substitution therapy in hypopituitarism (pp 1164-1174) and Addisonian adrenal cortical insufficiency (p 1271) With Hench's demonstration of the potential of artificially induced hypercortinism fields of investigation broadened to include inquiries into the pathogenesis and treatment of many syndromes previously imperfectly understood and therapeutically resistant Already there is rich promise of incalculable benefits on the realistic plane of patient management and on broader biologic levels it becomes possible to integrate the seemingly unrelated disciplines of endocrinology immunology allergy infection and neoplastic disease

Attempts to summarize such active fields of investigation involve difficulties and hazards Nevertheless the following collection and classification of available information (derived from recent current and

with 4 gm of sodium bicarbonate. If patient is desperately ill or nauseated substitute intravenous injection of 2.5 gm each of sodium sulfadiazine and sodium sulfamerazine in 200 to 500 cc of sterile diluent preferably molar lactate.

Continuing Care (Favorable Course)

1. Maintain penicillin levels for minimum period of two months with two daily injections each of 300 000 units of procaine penicillin G in aqueous suspension. If daily injections are inconvenient substitute (a) 250 000 units of penicillin G orally three times daily between injections or (b) deposit 300 000 to 600 000 units of procaine penicillin G in oil with 2% aluminum monostearate for 48 to 96 hour levels.

2. With signs of pulmonary involvement supplement parenteral penicillin with aerosolizations twice or thrice daily using additional 100 000 units of penicillin G for each treatment.

3. Maintain sulfonamide levels for two or three weeks provided there are no evidences of toxicity (p. 94). Use oral doses of 0.5 to 1 gm each of sulfadiazine and sulfamerazine thrice daily.

4. Concurrently with penicillin sulfonamide give antihistamine prophylactically. Prescribe 50 mg of pyribenzamine or benadryl four times daily.

5. After skin sensitivity has been determined initiate vaccine therapy. Start sensitized patient with 0.1 cc of 1:100 or 1:1000 solution depending on degree of erythema. Non-sensitive may be given 0.1 cc of undiluted vaccine. Give injections every second or third day increasing dose by increments of 0.1 cc if possible until full dose of 1 cc of undiluted vaccine is tolerated.

6. If the wound has been surgically treated irrigate several times daily with aqueous penicillin G (1 cc = 10 000 units).

Continuing Care (Unfavorable Course)

1. Increase penicillin levels by raising daily doses as high as 10 000 000 units of aqueous procaine penicillin G.

2. Unless there are manifestations of sulfonamide toxicity step up daily dose to 6 to 9 gm. Get daily hemogram and urine for evidences of blood dyscrasia and/or renal irritation.

3. Supplement penicillin sulfonamide combination with intramuscular injections twice daily of 1 gm streptomycin.

4. Add 0.5 gm streptomycin to penicillin aerosol.

5. Continue antihistamine and vaccine.

6. If primary lesion has not been excised and patient is not skin sensitive consider roentgen therapy. If patient is skin sensitive postpone irradiation until undiluted vaccine is tolerated.

7. If primary lesion has been excised and radiation therapy cannot be given for whatever reason initiate iodide therapy. Start with 0.6 to 1 cc of saturated potassium iodide thrice daily in milk or soup. Increase total daily dose by increments of 0.2 cc to maximum daily dose of 12 cc unless manifestations of iodism (p. 612) are encountered.

ADRENAL CORTICAL PREPARATIONS AND SUBSTITUTES (*Continued*)

Preparation

Comment

dosage may cause hypertension, cardiac hypertrophy and edema

For production of therapeutic hypercortinism inject 5-10 mg intramuscularly followed, within 15 minutes by intravenous introduction of 100 mg of ascorbic acid Do not persist unless prompt alleviation of symptoms is noted.

Desoxycorticosterone
(Schering-Ciba)

Pellets

For subcutaneous deposit in maintenance of remission in Addisonian adrenal cortical insufficiency Use 100 mg equivalent to daily doses of 0.3-0.4 mg of peanut oil preparation.

DOCA (Roche)
Estrogen

See Desoxycorticosterone Acetate

Suggested substitute for cortone in the production of artificial therapeutic hypercortinism May have possibilities in the management of male schizophrenics

Lipo Adrenal Cortex (Upjohn)
N.N.R.

Oil-soluble extract of whole gland containing 17-hydroxycorticosterone, 11-dehydro-17-hydrocorticosterone and 11-dehydrocorticosterone For substitution therapy in Addisonian adrenal cortical deficiency inject intramuscularly 2-5 cc every 6-8 hours So far as is presently known ineffective in the production of artificial therapeutic hypercortinism

Percorten (Ciba) N.N.R.

See Desoxycorticosterone Acetate

Δ 5 pregnenolone
(Schering)

(Prenolon)

Suggested substitute for cortone in the production of artificial therapeutic hypercortinism Give intramuscularly in daily doses of 100-200 mg (Davison et al Arch Int Med 85:365)

Prenolon (Schering)

See Δ 5 pregnenolone

Testosterone Propionate

Suggested substitute for cortone in the production of artificial therapeutic hypercortinism May have possibilities in the management of female schizophrenics

CORTONE (MERCK) CORTISONE ACETATE, COMPOUND E (KENDALL)

Cortone acetate is chemically 11-dehydro-17-hydroxy corticosterone 21-acetate It is identical with compound E of Kendall Substance FA (Reichstein) and compound F (Wintersteiner and Pfaffner) Cortone is also referred to in the literature as cortisone and as cortisone acetate

Cortone has been synthesized from bile acids in the Merck Laboratories by L. H. Sarett It is a white or nearly white powder soluble in water to the extent of 2 mg per 100 cc For clinical use it is marketed in saline solution with inert suspending agents and 1.5 per cent benzyl alcohol as a preservative At room temperature cortone decomposes very slowly However the product must not be refrigerated lest the suspension alter its physical state and become decreased in its efficacy

Currently cortone acetate is supplied in vials containing 12 cc or the equivalent of 300 mg Thus each single cc possesses the activity of 25 mg of cortone acetate when injected intramuscularly through a

pending researches) particularly highlight those reports which possess therapeutic possibilities in medical practice. Additionally there are included tentative suggestions for the treatment of conditions in which there are theoretical possibilities at least for symptomatic relief. For more complete details and bibliographic references the reader is urged to consult Dr. Hench's collective abstract in the Archives of Internal Medicine 85:545 (April 1950) and the Proceedings of the First Clinical ACTH Conference edited by Dr. John R. Mote (Blakiston Company 1950).

ADRENAL CORTICAL EXTRACTS

Prime interest in adrenal cortical extracts previously focussed on desoxycorticosterone used specifically in the treatment of Addisonian adrenal cortical deficiency. Currently attention is directed to 17-hydroxy-11-dehydrocorticosterone known also as compound E, cortisone and cortone (Merck) whose remarkable clinical effects are not duplicated by any other of the listed products yielded by the adrenal cortex.

ADRENAL CORTICAL PREPARATIONS AND SUBSTITUTES

| Preparation | Comment |
|--|--|
| Adrenal Cortical Extract (Parke Davis and Upjohn) N N R | Aqueous extract of gland freed from epinephrine. Assayed so that 1 cc = 50 units (Cartland Kunzenga). For Addisonian crises inject intramuscularly or intravenously 20 cc (1,000 units). Repeat every 2 or 3 hours as needed. For maintenance 500 units daily may suffice. |
| Art. one (Wyeth) | Commercially available brand of pregnenolone. |
| Compound A (11-dehydrocorticosterone) | Not commercially available. Apparently ineffective for substitution therapy or for production of artificial hypercortinism. |
| Compound E (Cortisone Cortone Merck) (17-hydroxy-11-dehydrocorticosterone) | Currently the most effective product for production of artificial therapeutic hypercortinism. Used in symptomatic treatment of a diversity of clinical disorders including histamine type and tuberculin type hypersensitivities, bacterial and other allergies, neoplasms, etc. Commercially available to a limited degree as cortone (Merck). See accompanying descriptive material (p. 4145). |
| Compound F (17-hydroxycorticosterone) | Not commercially available. Has some of the therapeutic properties of compound E but to a considerably lesser degree. |
| Cortisone | See compound E. |
| Cortone (Merck) | See text (p. 4145). |
| Desoxycorticosterone Acetate (Docrac Roche Percorten Ciba) N N R | Peanut oil solution of synthetic steroid prepared so that 1 cc = 5 mg. For Addisonian crisis inject intramuscularly 5-10 mg. For maintenance give 1-5 mg together with 6-8 gm of sodium chloride. Over |

Specific Substitution Therapy with ACTH

Within certain well defined limitations ACTH holds promise for substitution treatment in hypopituitarism and also in Addisonian adrenocortical deficiency

In the hypopituitary states of dwarfism (p 1164) mongolian idiocy (Fig 243 p 1166) Laurence Moon Biedl syndrome (p 1166) Frohlich adiposo-genital syndrome (Fig 244 p 1168) and Simmonds disease (Fig 245 p 1171) a trial of injections is certainly warranted. However sensational results cannot be anticipated since anterior pituitary adrenocorticotrophic hormone contains neither growth follicle stimulating luteinizing gonadotrophic thyrotrophic nor lactogenic principles of pan pituitary secretion

In the treatment of Addisonian adrenocortical deficiency ACTH should prove superior to cortone since it evokes the *outpouring* of all adrenal cortical principles whereas adrenocortical extract merely *supplies* 11 dehydro-17 hydroxycorticosterone. Against the advantage of provision of pan adrenocortical secretion is the offset that the handicapped hormonal structure must contain sufficient viable tissue to respond to stimulus from the master gland if the patient is to benefit from injections. In all likelihood optimum therapeutic results will be obtained by combining stimulation by ACTH and substitution with cortone

THE EVOLUTION OF THE CONCEPT OF ARTIFICIALLY INDUCED THERAPEUTIC HYPERCORTINISM

The therapeutic potential of artificially induced hypercortinism was first recognized and eventually demonstrated by Philip Hench in a series of researches which rank with the greatest of medical triumphs. In order fully to appreciate Hench's monumental contributions the reader is urged to familiarize himself with the material on Allergy in this current Progress Volume (p 4163) and with the Introduction especially the subdivisions concerned with histamine type and tuberculin type hypersensitivity reactions

When the concept of hypersensitivity reactions has been clearly understood intelligent use of ACTH and cortone will be enhanced by tracing the steps which led Hench from nebulous hypothesis to definitive therapeutic triumph

1925

1 From the observation that weakness, fatigue and hypotension were commonly observed in patients with rheumatoid arthritis Hench predicted that in connection with or in addition to a supposed factor of infection secondary metabolic changes were present and that these latter somehow involved the adrenal glands

2 Post mortem examination of adrenal glands of two patients who had suffered from rheumatoid arthritis afforded no support to the hypothesis

20 gauge or larger hypodermic needle. The average daily dose of cortone approximates 100-200 mg. Optimum dosage depends on patient response.

ANTERIOR PITUITARY ADRENOCORTICOTROPIC HORMONE (ACTH)

Adrenocorticotrophic principle was first isolated by Collip in 1933. Further purification was accomplished by a variety of workers resulting in the isolation of a protein complex with a molecular weight approximating 22,000. In 1948 Li disintegrated ACTH by pepsin digestion into a mixture of smaller units. Of these a peptide fragment of low molecular weight was discovered to retain the adrenal stimulating properties of whole ACTH protein.

Only small quantities of ACTH have been recovered since its first isolation. Until February 8, 1949, when ACTH first was injected by Hench as a substitute for compound E in the treatment of rheumatoid arthritis, available supplies were used for physiologic studies and for treatment of Addison's disease, various hypopituitary states and miscellaneous syndromes.

Currently ACTH is not commercially available. The limited supplies prepared by the Armour and Wilson Laboratories from pituitary glands of hogs are allocated to qualified research workers by the director, Dr. John R. Mote, to whom application must be made. The present preparation of ACTH is a saline solution containing a small amount of impurity consisting mostly of posterior pituitary substance and some pigment-producing pars media secretion. Injections are made intramuscularly in average daily doses of 100 mg, pharmacologically equivalent to approximately 200 mg or more of cortone. Since ACTH is utilized rapidly by the body, the total daily dose is best given in divided amounts at 6 to 8 hour intervals.

None of the previously described commercially available preparations of anterior pituitary extracts (Table 79, p. 1154) possesses significant adrenocorticotrophic activity. Hence they cannot be substituted effectually for ACTH. Conversely, ACTH is devoid of significant growth, lactogenic, follicle stimulating, luteinizing, gonadotropic and thyrotropic principles. Therefore, ACTH must not be regarded as a pan-pituitary product.

Specific Substitution Therapy with Cortone

Most manifestations of Addisonian adrenal cortical deficiency are controlled by remarkably small doses of cortone. However, since cortone is but one of many principles secreted by its parent gland, maintenance of normal blood electrolyte levels and complete dissipation of symptomatology require supplementary administration of desoxycorticosterone and sodium chloride (p. 4160).

Whereas ACTH also may be used in the treatment of Addison's disease, cortone is of no value in the management of hypopituitarism, since the anterior pituitary-adrenocortical interrelationship is not reversible and proceeds exclusively from the former to the latter.

cortin was administered to three patients with rheumatoid arthritis but the results were unimpressive

1942

Having neither compound ■ nor any other potent adrenal product Hench decided to induce jaundice in arthritic volunteers by introduction of lactophenin. Temporary remissions were induced but the agent responsible for improvement could not be identified.

May 1948

During the years of Hench's persistent devotion to his problem (1925-1948) prodigious cooperative efforts were being made to produce compound E by Kendall and his associates at the Mayo Clinic and by Dr L. H. Sarett of Merck and Company. Until May 1948 only enough material was obtained for treatment of a few patients with Addison's disease whose lives were in jeopardy.

Sept 21 1948

1 On September 21 1948 Merck and Company made available for the treatment of one woman badly crippled with rheumatoid arthritis (Case 1 Arch Int Med 85 613) a small supply of compound E. This was administered as the very first clinical trial of a hypothesis that had emerged as the result of twenty three years of study observation and experimentation. The results of this historic event are best told in Hench's own words:

On the morning of September 21 before the first injection of cortisone the patient could hardly get out of bed once she tried to walk it was too painful and so she remained at rest. But on September 23 after two days of use of cortisone she woke with much less muscular stiffness and soreness rolled over in bed easily for the first time in weeks and noted increased strength and appetite. Although she felt much better subjectively and the fibrositic component seemed to be much decreased articular tenderness was unchanged. On the next day (September 24) improvement continued and we found her exercising raising her hands over her head previously impossible. She visited several patients to demonstrate her changed condition. Painful stiffness was gone. My muscles feel stronger and my appetite is very good. After six days of use of cortisone she had lost almost all her stiffness articular tenderness and pain on motion were markedly reduced. The next afternoon (September 28) she shopped for three hours downtown feeling tired thereafter but not sore or stiff. She noted a sense of well being. I have never felt better in my life.

2 When we noted in September 1948 the effect of cortisone on rheumatoid arthritis it seemed logical to determine as soon as possible the effect of ACTH also since ACTH stimulates response of adrenal glands to produce cortisone or the cortisone like substance compound F. Before giving it we were not certain what our results would be. If the adrenal glands of rheumatoid patients were producing

1929

1 Failing to establish a morphologic relationship between adrenal glands and rheumatoid arthritis Hench noted (as had many before him) an amelioration of manifestations of rheumatoid arthritis as the result of coincidental jaundice. Contrary to current opinions he concluded that rheumatoid arthritis was potentially reversible. It was not necessary a relentlessly progressive uncontrollable disease for which no really satisfactory and rapid treatment or control need ever be expected.

2 Hench suggested the label "anti rheumatic substance X" for the unknown ameliorating agent which he then believed to be an hepatic or biliary constituent.

3 Trials using hepatic substances in the treatment of rheumatoid arthritis were conducted without success.

1931

From the clinical observation that pregnancy also exerts a beneficial effect on rheumatoid arthritis Hench questioned whether the agents responsible for relief by pregnancy and jaundice were identical or closely related.

1938

1 When he noted that jaundiced rheumatoid men experienced the same relief as pregnant non jaundiced rheumatoid women Hench concluded that so called "anti rheumatic substance X" could be neither bilirubin nor female sex hormone. He suggested that it was probably a biologic compound specific in nature and function and normal in healthy human organisms but perhaps lacking or deficient in patients with rheumatoid arthritis.

2 Since pregnancy alters the concentration of hormones and disturbs hormonal equilibrium the suspicion arose that "anti rheumatic substance X" might be a bisexual steroid hormone. Among substances that Hench listed for eventual trial in testing his hypothesis was whole adrenal cortex extract then called cortin.

Following the observation that pregnancy and/or jaundice not only relieved rheumatoid arthritis but sometimes behaved equally favorably in non rheumatic conditions (hay fever, asthma, egg sensitivity, migraine and psoriasis) Hench suggested that the phenomenon of relief was not specific to rheumatoid arthritis but was rather group specific. With uncanny prescience the investigator now suspected that "anti rheumatic substance X" if identified would find usefulness in the management of a number of disturbances.

1941

1 During conferences with Kendall a note was made to try compound E when it became available. Unfortunately there was no preparation at that time suitable for injection into the human being.

2 In the absence of compound E Kendall's adrenal cortical extract

festations of a perverse response to trauma clinically desirable phenomena are observed in the antirheumatic effects of diminution in synovial and articular swelling reduction of pyrexia tachycardia and erythrocyte sedimentation rates and abolition of pain Yet if it becomes necessary to perform surgical procedures during the course of artificially induced hypercortinism the wound will not heal and fractures incidentally suffered will fail to unite Conversely if during the course of incidental operative procedure or traumatic experience administration of cortisone and/or ACTH is discontinued the wound of the normal skin will heal and the fracture will unite but the manifestations of the perverse response clinically recognizable as the syndrome of rheumatoid arthritis will recur

There is about the results of artificially induced hypercortinism none of the relative certainty that prevails for example in penicillin treatment of gonorrhea Of Hench's first series of twenty three patients with rheumatoid arthritis treated with cortisone or ACTH nine experienced marked antirheumatic effects with no or minimal side effects eight had marked antirheumatic effects but mild side effects two had marked antirheumatic effect and moderate side effects and four had marked or moderate antirheumatic effects and marked side effects Following withdrawal of cortisone or ACTH some patients experienced an immediate return of rheumatic activity others suffered a rebound relapse in which their condition was worse than it was before treatment still others had reasonably protracted relief and the most fortunate experienced longer remissions that have lasted up to a year at the time of Hench's publication

These clinical vagaries of artificially induced hypercortinism have not been emphasized for the purpose of discouraging the practitioner from use of cortisone and/or ACTH nor are they intended to support the views of academicians who insist that institutionalization is required for this type of hormonal therapy They are presented to alert the practitioner to the necessity for careful observation and thoughtful interpretation during the course of his clinical experiment It is only by thorough knowledge of the potentialities of hypercortinism that the therapist can have any appreciation of seemingly paradoxical responses and of individual variations

Cortisone and ACTH are as easily injected as insulin Undesirable effects are readily recognizable by the careful clinician who observes conscientiously the course of therapy Undesirable manifestations are transitory and usually are reversible as soon as hormonal disequilibrium is corrected by interruption of glandular therapy For more enlightened guidance the accompanying charts have been prepared to demonstrate the wide range of manifestations due to clinically induced hypercortinism and the many variables often dependent on imponderable individual circumstances

EFFECTS OF ARTIFICIAL HYPERCORTINISM

Adipose Tissue

Rounding of face increased width of pelvic girdle and development of retro cervical fat (buffalo hump) as in Cushing's hyperadrenalinism Noted in approximately 30% of patients particularly those under long term therapy

not cortisone but an altered product related to the causation of the disease stimulation of such adrenal glands might increase rather than decrease articular symptoms

Feb 8 1949

ACTH was given (ca e 14) 100 mg daily (25 mg at 8 A M and 4 P M and 50 mg at 10 P M) for 12 days (Feb 8-19) Within about a week stiffness had disappeared and tenderness and aching were decreased After 11 days of use of ACTH the patient had complete subjective relief an estimated over all relief of 90 per cent She had three consecutive days free of pain the first such in five years The sedimentation rate fell precipitously 75 mm during the first 9 days on ACTH from 93 to 18 mm

Clinical Manifestations of Artificially Induced Hypercortinism

Deliberate induction of hypercortinism for therapeutic purpose is a clinical experiment involving so many imponderables that prediction of anticipated results is a hazardous undertaking even for the experienced As Hensch has stated Cortisone and ACTH are potent agents capable of affecting many parts of the human economy many bodily functions and many tissues other than those of joints and muscle

Under certain circumstances some effects of hypercortinism are desirable while others may be decidedly undesirable The diabetic with rheumatoid arthritis simultaneously may experience a favorable antirheumatic response in association with diminished carbohydrate tolerance and increased insulin resistance The rheumatic child on the verge of backward failure may be relieved of arthralgia and pyrexia yet suffer sufficient water retention to be thrown into pulmonary edema In each instance both desirable and undesirable manifestations are equally explicable results of the artificially disturbed hormonal equilibrium It is not correct to state that desirable features are clinical effects and that undesirable are side or toxic effects Each as Hensch insists is an understandably physiologic response to the administration of potent adrenocortical hormone or adrenocorticotrophic factor

Among immeasurable variables which may determine responses to artificially induced hypercortinism are prevailing endocrinal equilibriums and the existing functional state of terminal tissues Illustrative of the former Selye has shown an antagonistic relationship between the intrinsic adrenal cortical secretions desoxycorticosterone and cortisone Injections of the former produce much more significant hypertensive effects in adrenalectomized than in normal animals suggesting that intact gland secretes a substance (probably cortisone) antagonistic to pressor effects of desoxycorticosterone

Again manifestations of artificially induced hypercortinism may depend on the functional state of end tissues at the time of production of glandular disequilibrium Normal epidermal and mesenchymal structures respond to hypercortinism by sluggish or absent responses to injury In the patient with rheumatoid arthritis suffering from mani

Eosinophils Circulating

No consistent change with cortone but specific eosinopenia from effective doses of ACTH. Use total eosinophile count as guide to therapy. Greatest degree of eosinopenia occurs 3-5 hours after intramuscular injection of an adequate dose of ACTH. Reduction of eosinophils below 100 cells per cu mm often associated with overdosage phenomena. Failure of eosinopenic response usually indicates clinically inadequate therapeutic response (Mote p 6)

Epithelium

Growth inhibited. Lack of epithelialization delays wound healing but exerts a favorable effect in peoniasis and other dermatoses probably related to tuberculin type hypersensitivity (p 4169)

Erythrocytes Circulating

Tend to rise when hypercortinism is induced in conditions associated with anemia

Erythrocyte Sedimentation Rate

Tends to fall when hypercortinism is induced in conditions associated with rapid rates

Fibrin and Fibroblasts

Depression delays wound healing in normal areas but favors antirheumatic effects on synovia articular structures and subcutaneous nodules

Flexion Deformities

Rapidly disappear if due to non fibrous lesions secondary to hypersensitivity phenomena

Granulations

Inhibition delays wound healing but favors antirheumatic effects

Hair

Hirsuties presumably due to increased androgenic activity. Particularly undesirable in females

Heart Rate

Tachycardia rapidly diminishes if increased pulse rate is due to hypersensitivity manifestations

Hemoglobin

Tends to rise when hypercortinism is induced in conditions associated with anemia

Leukocytes Circulating

Occasional increase in total numbers of circulating leukocytes and immature granulocytes with eosinopenia and lymphopenia. Latter effect utilized in treatment of lymphatic leukemias malignant lymphomas follicular lymphoblastoma etc

Libido and Potency

Diminished in 3 of 8 men

Lymph

Depression favors decrease of swelling as part of antirheumatic effect

Lymphocytes Tissue and Plasma Cells

Inhibition delays wound healing in normal structures but may favor antirheumatic effects

EFFECTS OF ARTIFICIAL HYPERCORTINISM (*Continued*)**Anaphylatoxin**

Production inhibited suggesting that patient with artificially induced hypercortinism has greater resistance to anaphylactic shock and other hypersensitivity reactions including serum sickness. May prove future aid to prophylaxis and active treatment of acute histamine type hypersensitivity reactions.

Antibody Circulating

Titers significantly decreased resulting in increased vulnerability of patient to bacterial invasion. Practical suggestions include need for massive doses of indicated antibiotic and/or temporary interruption of cortisone or ACTH until infection is controlled.

Appetite

Increases strikingly with loss of symptoms due to hypersensitivity phenomena.

Arthropathies

Rapidly ameliorated if due to perversion of the mechanisms of bodily defense (rheumatoid arthritis rheumatic fever, etc.)

Blood Coagulability

Blood clotting significantly decreased. Possible future application of this observation to prevention and treatment of intravascular clotting in thrombophiles (p. 4571).

Blood Pressure

No significant consistent changes. Cortisone may offset hypertensive effects of desoxycorticosterone.

Body Temperature

Tends to revert to normal when fever is due to conditions amenable to artificial hypercortinism (Rheumatic fever, rheumatoid arthritis, disseminated acute lupus erythematosus, periarteritis nodosa, etc.).

Callus (in Fractures)

Formation inhibited in experimentally produced lesions of cortisone-treated animals.

Capillary Tufts

Depression delays granulation of artificially induced wounds in normals but may favor antirheumatic effects.

Carbohydrate

Under normal condition, but slight impairment of carbohydrate tolerance. With very large doses of cortisone or ACTH, marked hyperglycemia with glycosuria. In the treatment of rheumatic patients with associated or coincidental diabetes mellitus, there may be marked reduction of carbohydrate tolerance with increased insulin resistance, suggesting an adrenocortical hyperglycemia.

Corticosteroids

Urinary concentration initially increased during artificial hypercortinism. After long-continued administration, levels fall, suggesting exhaustion of the glandular mechanism and exposing the patient to lessened responses to emergency demands incidental to acute infections or indicated surgery.

Elastic Tissue

Friability results in reddish striae, particularly over thighs. Most often seen in young girls under therapy.

Weight

Nutritional gains with increased appetite and diminution of symptoms resulting from hypersensitivity phenomena. Rapid and transitory gains more likely the result of retention of water and salt (invisible edema)

Practical Therapeutics

Realistic application of the principles of artificial hypercortinism to the treatment of the individual patient by the general practitioner is currently limited as the result of questionable efficacy of commercially available products, inadequate supply and excessive cost of potent material, incomplete experiences in many conditions in which cortone-
ACTH conceivably may be of extraordinary value and insufficient material for thorough assimilation of the mass of data currently being assembled.

For this reason, the undernoted suggestions must be regarded as tentative and subject to change with accumulation of new facts and availability of new products.

1. At the time of this writing (May 1950) the only adrenal cortical preparation that possesses the full properties of compound E is cortone (Eck). This product may be obtained on application by the qualified physician to Dr. J. M. Carlisle, Medical Director, Rahway, New Jersey.

Currently cortone is only allocated for conditions of great urgency and is marketed in 12 cc. vials which contain a total of 300 mg. (1 cc. = 25 mg.).

Keep cortone at room temperature. It must not be refrigerated. Inject intramuscularly in an average initial dose of 100 mg. every eight hours for 3 doses. Follow by maintenance doses of 50 mg. every twelve hours for two doses and 50 mg. every twelve hours thereafter until the maximum therapeutic response is obtained and that serious undesirable manifestations are not previously or previously encountered.

When the maximum response to cortone has occurred, reduce the dose in stepwise fashion. At 2 or 3 day intervals cut down the initial dose by 10-15 mg. until the total daily dose is 50 mg. given in divided doses at 12 hour intervals and then as a single daily dose. If improvement persists, give 100 mg. every second day. Should a relapse occur, re-establish the daily dose of 100 mg. If maximum response again is evident, thereafter make another attempt to diminish the individual dose in stepwise fashion as previously indicated.

In the event that the expected therapeutic response is not obtained within four to five days after initiation of cortone therapy, increase the daily dose to 200 mg. Inject 4 cc. every 12 hours for four days, then if possible return to 50 mg. dose twice daily. Currently supplies of ACTH necessarily are held even more tightly than the Armour Laboratories. To apply for ACTH, communicate with Dr. John R. Mote, Director of Medical Research of the Armour Laboratories, Chicago, Illinois.

EFFECTS OF ARTIFICIAL HYPERCORTINISM (*Continued*)**Anaphylatoxin**

Production inhibited suggesting that patient with artificially induced hypercortinism has greater resistance to anaphylactic shock and other hypersensitivity reactions including serum sickness. May prove future aid to prophylaxis and active treatment of acute in tamino type hypersensitivity reactions.

Antibody Circulating

Titers significantly decreased resulting in increased vulnerability of patient to bacterial invasion. Practical suggestions include need for massive doses of indicated antibiotic and/or temporary intermission of cortisone or ACTH until infection is controlled.

Appetite

Increases strikingly with loss of symptoms due to hypersensitivity phenomena.

Arthropathies

Rapidly ameliorated if due to perversions of the mechanisms of bodily defense (rheumatoid arthritis rheumatic fever etc.)

Blood Coagulability

Blood clotting significantly decreased. Possible future application of this observation to prevention and treatment of intravascular clotting in thrombophiles (p. 4571).

Blood Pressure

No significant consistent changes. Cortone may offset hypertensive effects of desoxycorticosterone.

Body Temperature

Tends to revert to normal when fever is due to conditions amenable to artificial hypercortinism (Rheumatic fever rheumatoid arthritis disseminated acute lupus erythematosus periarteritis nodosa etc.).

Callus (in Fractures)

Formation inhibited in experimentally produced lesions of cortone-treated animals.

Capillary Tufts

Depression delays granulation of artificially induced wounds in normals but may favor antirheumatic effects.

Carbohydrate

Under normal conditions but slight impairment of carbohydrate tolerance. With very large doses of cortone or ACTH marked hyperglycemia with glycosuria. In the treatment of rheumatic patients with a associated or coincidental diabetes mellitus there may be marked reduction of carbohydrate tolerance with increased insulin resistance suggesting an adrenocortical hyperglycemia.

Corticosteroids

Urinary concentrations initially increased during artificial hypercortinism. After long continued administration levels fall suggesting exhaustion of the glandular mechanism and exposing the patient to lessened responses to emergency demands incidental to acute infections or indicated surgery.

Elastic Tissue

Fraility results in reddish striae particularly over thighs. Most often seen in young girls under therapy.

4154 ADRENAL CORTICAL EXTRACTS

EFFECTS OF ARTIFICIAL HYPERCORTINISM (Continued)

Menstruation

Irregularities and amenorrhea apt to occur in adolescents with rheumatic fever

Muscle Smooth

Tonus and spasmosis inhibited presumably favoring relief of symptoms in urticaria angioneurotic edema and bronchial asthma

Potassium and Bicarbonate

Potassium diuresis may result in hypopota emia (p 731) with alkalosis Dis continue hormone and if nece sary introduce pots sium intravenously

Protein Total

Peduced when there is a fall in globulin motety Apply observation practically to treatment of nephrosis when there is a disturbance of albumin-globulin ratio

Psyche

Euphoria probably secondary to relief of manifestations due to hypersensitivity phenomena More marked with cortone than ACTH At least one patient with rheumatoid arthritis became psychotic during the cour e of ACTH therapy (Mote p 538) Against this at lea t one schizophrenic showed marked psy chiatric improvement after daily injections of 100 mg for 3 weeks (Mote p 551)

Sebum

Acne vulgaris presumably due to increased androgenic activity Unde irable under any circumstance

Serum Albumin

Not significantly affected under normal condition. but slightly increased v hen abnormal
f
scud n

Callus (in Fractures)

rd the normal of increased concentrations occasionally observ Formation inhibited in Only slight changes when normal conditions prevail animals

Capillary Tufts

Depression delays granulation of artu water may re ult in clinical edema best weight With discontinuance of hormone liberated as manifest by pontaneous may favor antirheumatic effects r di appearance of edema and rapid

Carbohydrate

Under normal conditions but slight impai en backwa d failure in the patient With very large doses of cortone or ACT nism appears desirable ob erve glycosuria In the treatment of rheumatic pay limitation of salt and water cidental diabetes mellitus there may be mark etics (p 4305) Should mani tolerance with increa ed insulin resistance s all efforts discontinuance of hyperglycemia

Corticosteroids

Urinary concentrations initially increased dur s ion of blood content Apply After long continued administration levels fall glandular mechanism and exposing the pati emergency demands incidental to acute infecti

Elastic Tissue

Fraility results in reddi h striae particularly chon of the production of 17 young girl under therapy ons are normal or above nor i decrea ed excretion Later

Weight

Nutritional gains with increased appetite and diminution of symptoms resulting from hypersensitivity phenomena. Rapid and transitory gains more likely the result of retention of water and salt (invisible edema)

Practical Therapeutics

Realistic application of the principles of artificial hypercortinism to the treatment of the individual patient by the general practitioner is currently limited as the result of questionable efficacy of commercially available products inadequate supply and excessive cost of potent material incomplete experiences in many conditions in which cortone or ACTH conceivably may be of extraordinary value and insufficient time for thorough assimilation of the mass of data currently being assembled

For this reason the undernoted suggestions must be regarded as tentative and subject to change with accumulation of new facts and availability of new products

1 At the time of this writing (May 1950) the only adrenal cortical preparation that possesses the full properties of compound E is cortone (Merck) This product may be obtained on application by the qualified physician to Dr J M Carlisle Medical Director Rahway New Jersey

2 Currently cortone is only allocated for conditions of great urgency It is marketed in 12 cc vials which contain a total of 300 mg (1 cc = 25 mg)

3 Keep cortone at room temperature It must not be refrigerated Give injections intramuscularly in an average initial dose of 100 mg or 4 cc every eight hours for 3 doses Follow by maintenance doses of 100 mg every twelve hours for two doses and 50 mg every twelve hours thereafter until the maximum therapeutic response is obtained provided that serious undesirable manifestations are not previously or simultaneously encountered

4 When the maximum response to cortone has occurred reduce daily dose in stepwise fashion At 2 or 3-day intervals cut down the individual dose by 10-15 mg until the total daily dose is 50 mg given at first in divided doses at 12 hour intervals and then as a single daily dose If improvement persists give 100 mg every second day Should a significant relapse occur reestablish the daily dose of 100 mg until a maximum response again is evident Thereafter make another attempt to diminish the individual dose in stepwise fashion as previously indicated

5 In the event that the expected therapeutic response is not obtained within four to five days after initiation of cortone therapy increase daily dose to 200 mg Inject 4 cc every 12 hours for four doses Then if possible return to 50 mg dose twice daily

6 Currently supplies of ACTH necessarily are held even more tightly by the Armour Laboratories To apply for ACTH communicate with Dr John R Mote Director of Medical Research of the Armour Laboratories Chicago Illinois

7 ACTH is presently marketed as a peptin digestive product dissolved in saline solution. Make injections intragluteally in the average daily dose of 100 mg. given in divided quantities at 6-8 hour intervals.

8 With a few exceptions ACTH and cortone may be used interchangeably. Recall that the two products are not physiologically equivalent milligram for milligram. Of ACTH 100 mg. apparently stimulates the production of possibly 200 mg. or more of cortone. In calculating dosage therefore twice as many milligrams of cortone must be administered to equal the physiologic effect of any given amount of ACTH.

9 For substitution endocrinologic effects in hypopituitarism choose ACTH since the anterior pituitary-adrenocortical relationship is not reversible and cortone is without significant efficacy in the treatment of deficiencies of the master gland.

10 In Addisonian adrenal cortical deficiency ACTH is valueless if there is not sufficient adrenal cortical tissue to respond to stimulation by adrenocorticotrophic hormone. On the other hand if there is sufficient functioning adrenal cortical tissue ACTH has the theoretical advantage at least that it is a pan-adrenocortical stimulus and does not merely evoke secretion of 17-hydroxy-11-dehydrocorticosterone. Finally since it acts by stimulation of adrenal cortical tissue ACTH may exhaust the residual or damaged adrenal cortical tissue, hazarding a crisis at the time of drug withdrawal. To offset this possible effect it is suggested that cortone therapy be continued after cessation of ACTH.

11 Because it is more rapidly absorbed and metabolized give ACTH two to four times daily. Cortisone may be injected only once or twice daily.

12 Since ACTH is a foreign protein allergic hypersensitivity reactions may be encountered. By contrast cortone is a synthesized molecule to which hypersensitivity reactions apparently do not occur.

13 Whereas cortone is a pure chemical ACTH may be contaminated by posterior pituitary substance and hence occasionally may give pharmacologic evidences of the impurity through production of mild abdominal cramps, flatus and nausea.

14 A rarer contaminant of ACTH is secretion from pars intermedia which has produced transitory pigmentation.

15 The most striking measurable difference between cortone and ACTH is the production by the latter of eosinopenia.

16 If the practitioner is unable to obtain ACTH or cortone he may try substitute preparations. For example frequent subcutaneous or intramuscular injections of adrenalin hydrochloride (epinephrine) using 0.5 to 1 cc. of 1:1000 solution may evoke adrenal cortical secretion. Provided that uncomfortable sympathomimetic manifestations are not produced (p. 3869) this readily available and relatively inexpensive substitute may be tried in the therapy of definitively responsive syndromes such as rheumatoid arthritis. If a result is not obtained within a very short time injections are best abandoned.

17 Of available steroids the practitioner may give intramuscular injections of doca (Roche) or per corten (Ciba) peanut oil solutions of

desoxycorticosterone acetate or of prenolon (Schering) which is $\Delta 5$ pregnenolone. The first two are of similar strength and the average dose is 1 cc equivalent to 5 mg. The dose of prenolon is 100 to 200 mg. Following the lead of European investigators intravenous injections of 100 mg of ascorbic acid (vitamin C) are given within five minutes of intramuscular injection of steroid. In this way it is assumed that conversion of desoxycorticosterone to cortisone is encouraged within the human economy. Both favorable and disappointing results have been reported. A trial period of a week or ten days is justified. With an encouraging response therapy may be continued; if definitive results are not obtained in the trial period injections are better abandoned.

18 Irrespective of the product employed bear in mind that none of these preparations is curative or even specific. Like opiates in the relief of pain and antihistamines in the relief of acute histamine type hypersensitivity reactions adrenal cortical and adrenocorticotrophic products merely afford symptomatic relief. If the etiologic mechanism is still operative when they are withdrawn symptoms will recur. Only in the event that the operative cause is transitory (as in histamine type hypersensitivities) will there be relatively lasting alleviation of distress.

19 Irrespective of the condition under therapy and irrespective of the auspices under which injections are given responses to cortisone and ACTH include both desirable and undesirable manifestations. The latter are not toxicologic side reactions; they are as physiologic as desirable effects. The therapist must take stock daily and decide whether the game is worth the candle. If desirable effects are striking and undesirable merely annoying therapy may be continued. Contrariwise even in the face of a satisfactory therapeutic result if objective manifestations are disturbing to the patient (hirsuties, acne) or to the therapist (weight gain due to retention of salt and water, glycosuria, hyperglycemia) administration of hormone must be reduced or if necessary abandoned.

20 In summary favorable results have been reported by Hench and Mote in some cases of rheumatic fever, pneumonia, tuberculosis, virus pneumonitis, atopic dermatitis, bronchial asthma, disseminated neurodermatitis, non-specific ulcerative colitis, the leukemias, periarteritis nodosa, hepatitis and alcoholism. ACTH has also been tried with good results in various ophthalmologic conditions (JAMA 142:1271, 1950).

21 In analogy to these encouraging results a trial of cortisone or ACTH would seem justified in all types of severe or persistent histamine type or tuberculin type hypersensitivity reactions, infections in which the invasive element is associated with significant or crippling bacterial hypersensitivity such as meningococcus infections, rabies or mycoses, neoplastic diseases in which the malignant cell is a hematologic component and chronic or potentially fatal diseases for which no other form of therapy is presently available.

Results in the treatment of poliomyelitis and carcinoma have been discouraging.

ADRENERGENS

The pharmacology and therapeutics of the adrenergic have received previous consideration (p 3876). Introduction of new preparations requires re-assessment of products previously described in comparison with those recently made available.

ADRENERGENS

| Chemical Name | Available Products |
|---------------------------------------|---|
| 2-Aminoheptane racemic Amphetamine | <i>Tuamine</i> (Lilly) Inhaler and nasal drops <i>Benzedrine benzedrine sulfate</i> (SKF) Inhalers and tablet |
| Ephedrine USP | Alkaloid derived from ma huang. Marketed as hydrochloride and sulfate. Effective orally (p 3880) |
| Ephedrine racemic | <i>Rac-ephedrine hydrochloride</i> or <i>sulfate</i> (Upjohn). Marketed in capsules and solution. Nasal drop |
| Epinephrine | <i>Adrenalin</i> (Parke Davis) <i>suprarenalin</i> (Armour) and <i>suprarenin</i> (Winthrop) |
| Isopropylarterenol | Bronchodilators marketed as <i>isuprel</i> (Winthrop) <i>isonorin</i> (Smith) <i>orthodoxine</i> (Upjohn) in U.S.A. and as <i>aludrine</i> in Europe. See also text |
| Methamphetamine | <i>Deorin</i> (Abbott) and <i>norodin</i> (Endo). Use as amphetamine (p 3882) |
| Naphazoline | <i>Privine</i> (Ciba) Nasal drops |
| Phenylephrine | <i>Neosynephrine</i> (Winthrop) p 3882 |
| Phenylpropanolamine | <i>Propadrine</i> (Sharp & Dohme) p 3883 |
| Phenylpropylmethylamine | <i>Vonedrine</i> (Merrell) Replaces amphetamine (p 3882) |

PHARMACOLOGY AND THERAPEUTICS OF ADRENERGENS

| Indication | Comment |
|-------------------------|---|
| Addison's disease | Of no value |
| Alcoholism | Try oral benzedrine, desoxyn or norodin (5 to 20 mg) |
| Allergy | Prefer antihistamines. If unsuccessful combine oral adrenergic (ephedrine, benzedrine, desoxyn) with antihistamine for cumulative anti-allergic effect. Cerebral depression from antihistamine is offset by cerebral stimulation of adrenergic. |
| Anaphylaxis | Epinephrine 1:10,000 or 1:1,000 intramuscularly or intravenously with antihistamine |
| Asthma | See Bronchoconstriction |
| Bronchoconstriction | <i>For acute attack</i> 1:1,000 <i>epinephrine</i> In asthma Epinephrine (1:100) isuprel or isonorin (1:200) spray for nose or throat. Isuprel or isonorin (10 to 15 mg) sublingually. Ephedrine (25 to 50 mg) or orthodoxine (100 mg) orally. Epinephrine (1:1,000 aqueous or 1:500 in oil) parenterally. The patient receiving adrenergic for the first time must be closely observed. Sufficient drug is given to control symptoms provided that side reactions particularly tachycardia, cerebral stimulation and tremor do not occur before the therapeutic effect of the preparation has been accomplished. |
| Circulatory depression | Especially in acute barbiturate poisoning consider oral adrenergic if mild parenteral amphetamine or desoxyn if severe |
| Circulatory stimulation | Avoid except in forward failure (shock) |

| | |
|----------------------|--|
| Forward failure | Ephedrine 25 or 50 mg epinephrine 1 1000 or nescyne phrine 1% parenterally |
| Hyperinsulinism | For hyperglycemic effect in spontaneous or therapeutic hypoglycemia inject parenterally 1 1000 epinephrine |
| Hypotension | In chronic hypoten. on oral ephedrine (25 to 50 mg) or benzedrine (25 to 100 mg) In acute hypotension inject epinephrine 1 1000 cautiously 4cc ephedrine 0.5% nescynephrine or 1% paredrine No elevation of intra-ocular ten. on |
| Mydriasis | Use benzedrine desoxyn or norodin (25 to 10 mg) |
| Narcolepsy | Inhalers benzedrine vonedrine tuamare |
| Nasal congestion | Nasal jellies ephedrine (1%) privity (0.05%) nescyne phrine (0.5%) propadrine (0.66%) Nasal solution ephedrine (3%) epinephrine (1 1000) privity (0.1 or 0.05%) neo yrephrine (1/8, 1/4 or 1%) propadrine (1 or 3%) racephedrine (1%) tuamare (1 or 2%) Oral use of arbutinamines appears far preferable to nasal instillation of adrenergic Arbutinamines may be combined with small doses of adrenergics such as ephedrine benzedrine or desoxyn |
| Obesity | Oral benzedrine desoxyn or norodin 25 to 10 mg before meals on an ing and at luncheon. If given later may produce cerebral stimulation sufficient to result in insomnia |
| Paralysis agitans | Prefer other muscle relaxants (artare parpanit) with fewer side effects but try benzedrine or desoxyn (25 to 10 mg) |
| Serum sickness | See Allergy above |
| Shock | See Forward Failure above |
| Stokes Adams disease | Oral ephedrine (25 to 50 mg) as prophylactic |
| Vasodilatation | For local effect, combine epinephrine 1 1000 with anes thetic for syst mic effect see Forward Failure above |

ADRENOCORTICAL DEFICIENCY

[Addison's Disease]

Studies of the adrenal cortex and of the syndrome of adrenal insufficiency as described by Addison (p 1271) continue to preoccupy many clinics despite the rarity with which the disturbance is encountered in clinical practice. Thus in thirty one years of an active private practice we have encountered only one case.

Pending large scale production of a potent adrenal cortical extract containing all hormonal components and/or its anterior pituitary adrenocorticotrophic factor the treatment of Addison's syndrome will probably continue to be laborious and not wholly satisfactory. Hence the practitioner might consider reference of his patient to special investigators actively engaged in the study of adrenocortical problems.

Treatment of the Crisis in Addison's Disease

Treatment of the Addisonian crisis continues to be complicated and hazardous. The technic employed by Sorkin and Soffer differs somewhat from that previously described (p 1278).

1 Set up an intravenous drip of physiologic saline with 5% glucose Do not exceed 2500 cc per twenty four hours discontinue as soon as fluids are tolerated orally

2 Into the tubing of the intravenous drip inject directly 20 cc of aqueous cortical extract (p 4144) Place another 20 cc in the drip for maintenance

3 Inject intramuscularly 5 to 10 mg of desoxycorticosterone acetate in oil Repeat in twelve hours if necessary and then reduce the dose to 5 mg daily if all is well After the crisis has subsided reduce the dose gradually to 1 to 2 mg daily unless the patient evinces an excessive increase in blood pressure retention of water or evidences of rapid increase in the size of the heart

4 Two to four hours after injection of desoxycorticosterone acetate deposit 5 cc of lipocortical extract intramuscularly repeat every two or four hours if necessary

5 If there are evidences of infection or the patient is febrile introduce 600 000 units of procaine penicillin G in oil with 2% aluminum monostearate

6 Maintain body warmth with blankets

7 Administer oxygen if necessary

8 Transfuse 500 cc of citrated blood if necessary

9 Avoid morphine its derivatives and substitutes

Maintenance Therapy in Addison's Disease

1 Inject a sufficient amount of desoxycorticosterone acetate daily to maintain weight blood pressure and well being The average dose approximates 0.5-1.5 mg

2 While the dose of desoxycorticosterone acetate is being determined give a fixed daily supplement of 4 gm of sodium chloride After the dose of extract has been determined decrease amount of sodium chloride if edema or hypertension occurs increase the dose during hot weather during the presence of infection or if signs of Addison's syndrome develop

3 Consider replacement of injection therapy by implantation of pellet Implant approximately 1 pellet of 125 mg for each 0.5 mg required for daily maintenance in injection therapy

ADRENOCORTICAL EXTRACTS

See Corti one and Compound E (p 4145)

ADRENOCORTICOTROPIC HORMONE ANTERIOR PITUITARY (ACTH)

See p 4146

AEROBACTER AEROGENES INFECTIONS

Principles of Diagnosis and Treatment

- 1 A aerogenes (B aerogenes) produces no characteristic clinical syndrome. The diagnosis of invasion rests on bacteriologic identification of the organism.
- 2 A aerogenes, a gram negative bacillus, is sensitive to aureomycin, chloramphenicol, the streptomycins and sulfonamides.
- 3 Of low virulence. A aerogenes usually is not a primary invader unless (a) the general resistance of the host is lowered, (b) there is impairment of local organ integrity, or (c) prior invasion by an organism of greater pathogenicity has occurred.
- 4 Whether A aerogenes produces systemic bacteremia or local inflammation (urinary, biliary, pulmonary, meningeal), anti-infective therapy must be supplemented by measures to (a) increase the general resistance of host, (b) remove impediments threatening the functional capacity of the infected organ (renal or biliary calculi, etc.) and (c) eliminate accompanying primary invaders.

Practical Management

Immediate Care

- 1 Obtain urine and hemogram; get blood for grouping and cross matching.
- 2 Check physical status for evidences of chronic or debilitating disease: glycosuria or renal insufficiency.
- 3 Depending on estimated severity of infection, give orally a priming dose of 30 to 60 mg. per kilo (2 to 4 gm. for adult weighing 150 lbs.) of chloramphenicol or aureomycin. Give 2 capsules in milk, soup or cream cheese every few minutes until total dose is administered (8 to 16 products each of 250 mg.).
- 4 Get plain radiographs of potentially involved organs (chest and biliary or genito-urinary tracts).

Continuing Care (Favorable Course)

- 1 Maintain antibiotic levels with 0.5 gm. chloramphenicol or aureomycin (2 products of 250 mg. each) every four to six hours.
- 2 Transfuse 500 cc. of citrated blood if red cells are less than 3,000,000 or hemoglobin below 7.5 gm.
- 3 Order high calory diet (p. 671).
- 4 Arrange for contrast roentgenograms of biliary and urinary tracts (cholecystogram and intravenous pyelogram).
- 5 Consult with surgeon if biliary tract is involved. Discuss interval operative intervention (cholecystectomy, etc.).
- 6 Request urologist to perform cystoscopy and retrograde pyelography (p. 2251). Consider interval operative procedure if organic disease is demonstrable.

1 Set up an intravenous drip of physiologic saline with 5% glucose. Do not exceed 2500 cc per twenty four hours. discontinue as soon as fluids are tolerated orally

2 Into the tubing of the intravenous drip inject directly 20 cc of aqueous cortical extract (p 4144). Place another 20 cc in the drip for maintenance

3 Inject intramuscularly 5 to 10 mg of desoxycorticosterone acetate in oil. Repeat in twelve hours if necessary and then reduce the dose to 5 mg daily if all is well. After the crisis has subsided reduce the dose gradually to 1 to 2 mg daily unless the patient evinces an excessive increase in blood pressure retention of water or evidences of rapid increase in the size of the heart

4 Two to four hours after injection of desoxycorticosterone acetate deposit 5 cc of lipocortical extract intramuscularly repeat every two or four hours if necessary

5 If there are evidences of infection or the patient is febrile introduce 600 000 units of procaine penicillin G in oil with 2% aluminum monostearate

6 Maintain body warmth with blankets

7 Administer oxygen if necessary

8 Transfuse 500 cc of citrated blood if necessary

9 Avoid morphine its derivatives and substitutes

Maintenance Therapy in Addison's Disease

1 Inject a sufficient amount of desoxycorticosterone acetate daily to maintain weight blood pressure and well being. The average dose approximates 0.5-1.5 mg

2 While the dose of desoxycorticosterone acetate is being determined give a fixed daily supplement of 4 gm of sodium chloride. After the dose of extract has been determined decrease amount of sodium chloride if edema or hypertension occurs increase the dose during hot weather during the presence of infection or if signs of Addison's syndrome develop

3 Consider replacement of injection therapy by implantation of pellet. Implant approximately 1 pellet of 125 mg for each 0.5 mg required for daily maintenance in injection therapy

ADRENOCORTICAL EXTRACTS

See Cortrone and Compound E (p 4145)

ADRENOCORTICOTROPIC HORMONE ANTERIOR PITUITARY (ACTH)

See p 4146

Available Products

Aerosporin ■ not yet commercially available

Pharmacology

Against gram negative bacteria aerosporin has a potency that is 10 to several 100 times that of streptomycin. Experimentally it appears especially protective against *H. pertussis*, *E. typhosa* and *H. bronchi septicus*. It apparently has no influence on *M. tuberculosis*.

Aerosporin is not absorbed from the intestine and hence cannot be given orally. Injected intramuscularly it disappears quickly from the blood so that doses must be repeated at 4 hour intervals.

Therapeutics

Intramuscular injections of 0.4 to 0.8 mg. at 4 hour intervals for five days appear effective in the control of pertussis in children. In view of the efficacy in pertussis of orally available non toxic aureomycin and chloramphenicol it is unlikely that manufacture of aerosporin will receive encouragement and support.

Toxicology

Aerosporin is not hemolytic and is no more leukotoxic than penicillin. Its minimum lethal intravenous dose ■ at least 75 times the average therapeutic dose so that it has a wide margin of safety. Unfortunately it is nephrotoxic at times perhaps due to impurity. If this factor can be eliminated aerosporin may be later added to the growing list of useful and non toxic antibiotics.

ALKALIGENES FECALIS INFECTION

B. alkaligenes fecalis is a gram negative organism which resembles *Aerobacter aerogenes* clinically, bacteriologically and in its antibiotic sensitivities. The Principles of Treatment and the Practical Management relevant to infections caused by *Aerobacter aerogenes* are equally applicable to those due to *Alkaligenes fecalis*.

ALLERGY

[Hypersensitivity]

In the introduction to the subject of Allergy (p. 547) attention was directed to the paradox that penicillin, a powerful anti-infective agent, is a derivative of a potentially invasive micro-organism, whereas per-versions of mechanisms of host defense may produce serious and even fatal clinical reactions.

Originally attention centered mostly on acute histamine type allergic

Continuing Care (Unfavorable Course)

- 1 With gastric intolerance either to chloramphenicol or aureomycin substitute other product in similar dose
- 2 With continued gastric intolerance to both substitute streptomycin by intramuscular injection Give priming dose of 1 gm followed by maintenance doses of 0.5 gm thrice daily
- 3 With continued evidences of infection supplement chloramphenicol aureomycin or streptomycin with (a) penicillin to eliminate potentially resistant primary invaders or (b) sulfonamide for synergistic antibiotic activity against *A. aerogenes*
- 4 If penicillin is used give priming dose intramuscularly of an aqueous suspension of 200 000 units of crystalline penicillin G with 600 000 units of crystalline procaine penicillin G Continue with 100 000 units penicillin G and 300 000 units procaine penicillin G once or twice daily
- 5 If sulfonamide is used give priming oral dose of 1.5 to 2.0 gm each of sulfadiazine and sulfamerazine with 4 gm sodium bicarbonate If stomach is intolerant due to causes other than sulfonamide toxicity inject loading dose intravenously using 2.5 gm each of sodium sulfadiazine and sodium sulfamerazine in 200 to 500 cc of sterile diluent preferably molar lactate (p 4546) Maintain sulfonamide levels with 0.5 to 1 gm of each thrice daily
- 6 Start antihistamine prophylactically Give 200 mg daily of pyribenzamine or benadryl

Continuing Care (Progressively Unfavorable Course)

- 1 In consultation with surgeon and urologist renew search for feeding focus
- 2 In absence of toxicity blanket bacterial spectrum with aureomycin or chloramphenicol streptomycin penicillin and sulfonamide
- 3 Increase penicillin levels by substituting crystalline procaine penicillin G in oil with 2% aluminum monostearate Continue 600 000 units daily at first Double unitage later if necessary
- 3 Increase dose of aureomycin or chloramphenicol With meningeal involvement remove 10 cc of cerebrospinal fluid and instill 8 cc of streptomycin (1 cc = 50 mg)
- 4 Increase dose of sulfonamide unless toxicity is observed in daily urinalyses and hemograms
- 5 Repeat transfusion if needed

AEROSPORIN

An antibiotic produced by *B. aerosporus* an aerobic spore bearing bacillus probably identical with *B. polymyxa* from which polymyxin is derived (p 4480)

Hypersensitivity and Active Immunity Clinically phenomena of hypersensitivity appear diametrically opposed to processes of active immunization. Immunologically however mechanisms of resistance and hypersensitivity possess many common characteristics.

Resistance To the best of present knowledge specific defensive antibody is chemically a globulin manufactured by connective tissue cells, fibroblasts, lymphocytes, monocytes, vascular endothelium, etc. Under normal conditions after inoculation with antigen the patient develops decreasing responses or resistance to subsequent exposures (active immunity).

It has been suggested that in active immunity parent cells manufacture defensive substance and then shed protective globulin more or less completely. Later when antigen and antibody meet their merger primarily occurs extracellularly. Under these circumstances antibody tends to protect the host against antigen and the process of active immunization has begun.

Hypersensitivity In those perversions of mechanisms of bodily defense known as hypersensitivity reactions introduction of antigen is also followed by production of antibody. Unfortunately however antibody is held partially or relatively completely by parent cells. When antigen is reintroduced later merger between antigen and antibody occurs intracellularly in whole or in part with disastrous effects to cell and host. In place of increased resistance to infection clinical manifestations are found which are presently grouped as allergic hypersensitivities. Upon subsequent exposure to specific antigen the tissues respond with increasing intensity.

Resistance or Hypersensitivity What determines whether a given individual shall respond by resistance, by hypersensitivity or by both mechanisms remains as yet unknown. Various theories have been advanced: (1) The character of antibody differs in the two conditions; (2) antibodies are alike and the variable is the character of response by parent cells; and finally (3) the determining factor is adrenocortical hormone which in turn is regulated by an anterior pituitary adrenocorticotrophic hormone.

Currently it seems most likely that the second and third hypotheses may be fitted to explain the strange phenomena. Quite likely it is antibody that is constant and cellular response that varies depending on the influences of hormonal factors. Thus in the therapeutic state of healthful active immunity obliging parent cells liberate antibody under the influence of adrenocortical hormone; meeting of antigen and antibody occurs in circulating fluid and the host is abetted in his defense against alien intruding substance. By contrast in the baneful condition of hypersensitivity antibody is retained in parent cells with greater or lesser tenacity; meeting of antigen and antibody occurs within the cell and resulting reactions are detrimental if not lethal to cell and host.

In acute histamine type allergic hypersensitivity intracellular union of antigen and antibody liberates histamine or histamine like substances. In chronic tuberculin type allergic hypersensitivities noxious products

hypersensitivities for in these clinical reactions the causal relationship between exposure to offending allergen and strange tissue responses was readily established. Currently renewed interest in chronic tuberculin type allergic hypersensitivity reactions has been stimulated by researches in many clinics and laboratories.

Terminology In the study and treatment of patients suffering from allergies many difficulties stem from insufficient knowledge of mechanisms which produce this strange disorder others arise from the bewildering terminology of the subject. The reader is under the semantogenic handicap of attempting to define each author's individual use of the terms allergy anaphylaxis atopy Koch's phenomenon

Arthus phenomenon Prausnitz-Kustner reaction Schvartzman phenomenon histamine type hypersensitivity tuberculin type hypersensitivity etc

At hazard of offense to the more enlightened the label of *allergic hypersensitivity* is used in the current text to cover all perversions of mechanisms of host defense. Other generally accepted technical terms are included when their use clarifies but does not confuse the presentation.

Etiology Many substances are capable of inducing allergic hypersensitivity. Originally it was believed that sensitizing agents were exclusively microbic (bacterial hypersensitivity). Later the concept was broadened to include any protein molecule (protein hypersensitivity). Currently the roster includes new molecules formed by union of non-protein with body protein as in the case of salicylates iodides sulfonamides etc.

The present list of proven offending allergens includes heterologous serums pollens contactual substances encountered in cosmetics or industry food substances physical agents psychic trauma inorganic and organic derivatives of microorganisms helminths plants and animals products of industrial chemistry and drugs and medicinals given with therapeutic intent including commonly prescribed medications such as salicylates iodides sulfonamides phenolphthalein dilantin antithyroid preparations and endocrine products (insulin heparin liver extract etc).

Consistent with fact the physician must be prepared to accept the following heresies: (1) alterations in mechanisms of body defense may convert many relatively harmless substances into highly toxic agents; (2) drugs serums and potent antibiotics may produce in the hypersensitive untoward manifestations that vary from discomfort and annoyance to incapacitation or even fatal illness.

Bacteriology and Serology Negative evidence favoring the theory of a hypersensitivity reaction is afforded by bacteriologic and serologic studies in suspected clinical disturbances which may have many features of infection i.e. fever leukocytosis increased erythrocyte sedimentation rate local inflammation etc. Yet in none have living organisms been recovered from tissues or blood despite extensive bacteriologic studies. Serologic findings are equally unrevealing except for demonstration of antistreptolysin and antifibrinolysin in rheumatic fever.

ACUTE HISTAMINE TYPE ALLERGIC HYPERSENSITIVITIES

| Clinical Syndrome | Usual Offending Allergen | Usual Shock Organ |
|---|---|--|
| GENERAL | | |
| Anaphylactic shock (p 547) | Serum (For treatment see p 4187) | Smooth muscle of vessels and bronchi blood |
| Serum sickness (p 548) | Serum (For treatment, see p 4519) | Skin, bronchial muscle mucous membranes |
| RESPIRATORY | | |
| Seasonal vasomotor rhinitis (Hay fever p 2097) | Pollen (For treatment, see p 4478) | Nasal mucous membrane |
| Non seasonal vasomotor rhinitis (p. 2098) | Bacteria (For treatment, see p 4249) | Nasal mucous membrane |
| Bronchial asthma (p 2101) | Pollen, bacteria, dusts and psychogenic (For treatment see p 4270.) | Bronchial muscle |
| Eosinophilic pneumonia (Loeffler's syndrome p 2104) | Bacteria (For treatment, see p 4318) | Pulmonary alveoli |
| TEGUMENTARY | | |
| Atopic dermatitis (Eczema p 3342) | Digestants (For treatment, see p 4329) | Skin. |
| Contact dermatitis (dermatitis venenata p 3330) | Poisoning drug cosmetics chemicals (For treatment, see p 4297) | Skin. |
| Dermatitis medicamentosa (p 3335) | Drugs chemicals cosmetics (For treatment, see p 4306) | Skin, mucous membranes. |
| Urticaria (hives p 3345) | Serum, drugs, drugs, bacteria, physical energy psychogenic | Skin and mucous membranes |
| Angioneurotic edema (p 3343) | As urticaria | As urticaria |
| Disseminated neurodermatitis (p 3343) | Digestants psychogenic | Skin. |
| Idiopathic pruritus (p 1916) | Psychogenic, digestants, bacteria, helminths | Skin. |
| OCULAR | | |
| Vernal conjunctivitis (p 1651) | Pollens chemical | Conjunctiva |
| Phlyctenular keratoconjunctivitis (p 1650) | Pollens bacteria | Conjunctiva and cornea |
| Sympathetic ophthalmia (p 1565) | Lens protein | Uninjured eye |
| Uveitis (p 1632) | Bacteria | Choroid and retina. |
| MISCELLANEOUS | | |
| Allergic arthropathy (p 2810 2878) | Serum bacteria drugs | Synovia and peritendinous structures |
| Physical allergy (p 552) | Heat cold light solar energy (For treatment, see p 4465) | Skin, kidney |
| Psychogenic allergy (p 552) | Psychic trauma | Skin, bronchial musculature |
| Endocrine allergy | To insulin liver extract heparin etc | Local reaction at injection site fever eczematoid. |
| Insect allergy (p 936 3197) | Bees wasps hornets scorpions | Skin mucous membranes |

of intracellular merger have not yet been identified. Nevertheless in either instance failure of parent cells to liberate antibody appears due to lack of adrenocortical hormone which in turn may result from deficient stimulus from anterior pituitary adrenocorticotrophic factor.

That the hypothesis is of more than academic significance is illustrated by palliative responses to histamine antagonists in acute histamine type allergic hypersensitivities and by symptomatic relief in chronic tuberculin type allergic hypersensitivity reactions when adrenocortical hormone pituitary adrenocorticotrophic factor (ACTH) or steroids having adrenocortical activity such as cortisone (compound E) are administered.

Resistance and Hypersensitivity According to expert opinion the reactions of active immunity and of hypersensitivity are not mutually exclusive. In the words of Rich (Harvey Lectures 1946/47) "Acquired resistance is not dependent upon hypersensitive inflammation for its effective operation . . . when the capacity to react with hypersensitivity inflammation is eliminated the immunity mechanism operates unimpaired and the tissues are spared from the damaging effects of hypersensitivity."

ACUTE HISTAMINE TYPE ALLERGIC HYPERSENSITIVITY REACTIONS

Whether hereditary (atopic) or acquired (anaphylactic) acute histamine type allergic hypersensitivity appears due at least in part to production or liberation of histamine or histamine like substances.

The clinical manifestations of histamine type hypersensitivity are many and varied and bear confusing labels (see Table p 4167). Some are named for offending allergens (serum sickness, dermatitis medicamentosa), others for shock organs (vasomotor rhinitis, vernal conjunctivitis) and still others for pathologic response (angioneurotic edema, eosinophilic pneumonitis). Whatever the terminology, each syndrome is clearly an individual response to a profound disturbance of mechanisms of defense. Hence the astute practitioner devotes himself primarily to a search for the sensitizing factor or factors and regards other considerations as accessory.

Common Denominators Histamine type clinical disturbances exhibit these common features. Each is due to perversion of normal responses of the body to introduction of foreign substance; in each the structure most affected is usually, but not always, the portal of entry for allergen; in each the response is disseminated beyond the portal of entry suggesting that the offending reaction is produced or accompanied by liberation of some hematogenously transported substance; provocative antigen in each is innocuous for those who do not exhibit hypersensitivity; there is relatively rapid development of clinical manifestations after exposure to specific noxious substance; inflammatory reactions are characterized by increased vascular permeability, exudation, spasm of smooth muscle and eosinophilia. The clinical syndromes may be duplicated by re-exposures to offending antigens; imitation of clinical syndromes in part follows injection of histamine; in the laboratory circulating antibody is demonstrable; passive transfer to the experi-

ACUTE HISTAMINE TYPE ALLERGIC HYPERSENSITIVITIES

| Clinical Syndrome | Usual Offending Allergen | Usual Shock Organ |
|---|---|---|
| GENERAL | | |
| Anaphylactic shock (p 549) | Serum (For treatment see p 4187) | Smooth muscle of vessels and bronchi blood. |
| Serum sickness (p 548) | Serum (For treatment see p 4519) | Skin, bronchial muscle mucous membranes |
| RESPIRATORY | | |
| Seasonal vasomotor rhinitis (Hay fever p 2097) | Pollen (For treatment see p 4478) | Nasal mucous membrane |
| Non seasonal vasomotor rhinitis (p 2098) | Bacteria (For treatment, see p 4249) | Nasal mucous membrane |
| Bronchial asthma (p 2101) | Pollen, bacteria digest ant. psychogenic (For treatment see p 4270) | Bronchial musculature |
| Eosinophilic pneumonitis (Loeffler's syndrome p 2104) | Bacteria (For treatment see p 4318) | Pulmonary alveoli |
| TEGUMENTARY | | |
| Atopic dermatitis (Eczema p 3342) | Digestants (For treatment see p 4329) | Skin |
| Contact dermatitis (dermatitis venenata p 3330) | Poison ivy drugs cosmetics chemicals (For treatment see p 4297) | Skin. |
| Dermatitis medicamentosa (p 3335) | Drugs chemicals cosmetics (For treatment see p 4306) | Skin mucous membranes |
| Urticaria (hives p 3345) | Serum digestants drugs bacteria physical energy psychogenic | Skin and mucous membranes |
| Angioneurotic edema (p 3343) | As urticaria | As urticaria |
| Disseminated neurodermatitis (p 3343) | Digestants psychogenic | Skin |
| Idiopathic pruritus (p 1916) | Psychogenic digestants bacteria helminths | Skin |
| OCULAR | | |
| Vernal conjunctivitis (p 1651) | Pollens chemicals | Conjunctiva |
| Phlyctenular keratoconjunctivitis (p 1650) | Pollens bacteria | Conjunctiva and corneas |
| Sympathetic ophthalmia (p 1565) | Lens protein | Uninjured eye |
| Uveitis (p 1632) | Bacteria | Choroid and retina |
| MISCELLANEOUS | | |
| Allergic arthropathy (p 2810 2878) | Serum bacteria drugs | Synovia and periarthicular structures |
| Physical allergy (p 552) | Heat cold light solar energy (For treatment see p 4465) | Skin kidneys |
| Psychogenic allergy (p 552) | Psychic trauma | Skin bronchial musculature |
| Endocrine allergy | To insulin live extract heparin etc | Local reaction at injection site fever eosinophilia |
| Insect allergy (p 936 3197) | Bees wasps hornets scorpions | Skin mucous membranes |

ACUTE HISTAMINE TYPE ALLERGIC HYPERSENSITIVITIES (*continued*)

| Clinical Syndrome | Usual Offending Allergen | Usual Shock Organ |
|------------------------------------|---------------------------------------|--|
| MISCELLANEOUS | | |
| Meniere's disease (p 1486) | Unknown | Internal ear (?) |
| Migraine (p 1506) | Digestant, psychogenic | Cerebral blood vessels (?) |
| Epilepsy (p 1515) | Digestants - psychogenic unknown | Central nervous system |
| Motion sickness (p 1487-3876) | Unknown (For treatment, see p 4218) | Unknown |
| Gastrointestinal allergy (p 176-7) | Foodstuffs (For treatment see p 4329) | Gastrointestinal mucosa and musculature |
| Urinary allergy | Unknown streptococcus | Mucosa of bladder and urethra kidneys (acute nephritis p 2373) |
| Gynecologic allergy | Psychogenic unknown | Uterine musculature (dysmenorrhea) |

mental animal may be accomplished symptomatic relief is obtained to greater or lesser degree by use of adrenergics and antihistamines cures may follow elimination of offending antigen or desensitization (p 4191)

Exceptions Many claims in the previous paragraph require qualification. Thus in dermatitis medicamentosa due to ingested drug the portal of entry for offending antigen is not most affected and the shock organ usually is the skin in pollen hypersensitivities the character of the response may be independent of antigen and dependent on patient response for one sensitized individual may develop hay fever while another suffers a bronchial asthma. That there is more to histamine type hypersensitivity than mere liberation of histamine is attested by failure of injected histamine to reproduce all clinical manifestations and by failure of adrenergics and antihistamines completely to palliate much less cure presenting clinical disturbance.

CHRONIC TUBERCULIN TYPE ALLERGIC HYPERSENSITIVITIES

The chronic tuberculin type allergic hypersensitivities otherwise variegated and puzzling have the undernoted characteristics in common suggesting their unitarian origin

- 1 Etiology and pathogenesis otherwise unknown
- 2 Clinical manifestations usually suggest the operation of an infectious element
- 3 Failure to respond to antibiotic agents
- 4 Manifestations not palliated by antihistamines or adrenergics
- 5 Negative bacteriologic and serologic findings
- 6 In many a precedent history of upper respiratory infection
- 7 In many a history of antecedent sensitivity reactions to food drugs pollens etc

- 8 Usual clinical course is characterized by remission and exacerbation neither explicable on infectious basis
- 9 Pathologically they exhibit some if not all of the polymorphous manifestations produced in sensitized experimental animals exposed to bacterial and non bacterial antigens such as heterologous serums salicylates sulfonamides etc
- 10 Preliminary investigations strongly intimate that each syndrome may respond to steroids possessing the activity of certain adrenal cortical hormones (cortisone)

CHRONIC TUBERCULIN TYPE ALLERGIC HYPERSENSITIVITIES

Clinical Syndrome

Usual Offending Allergen

BLOOD AND VASCULAR SYSTEMS

| | |
|---|---|
| Rheumatic fever (pp 186 and 4493) | Hemolytic streptococcus |
| Peri-arteritis nodosa (p 1027 and 4460) | Serum drugs (sulfonamide iodide dilantin salicylate thiourea and phenolphthalein) |
| Thrombo-angitis obliterans (p 1049) | Tobacco (?) |
| Atypical verrucous endocarditis (Libman Sachs) (p 1019) | Hemolytic streptococcus (?) |
| Non bacterial thrombotic endocarditis (p 1027) | ? |
| Visceral angitis (p 1027) | ? |
| Purpuras (p 3243) | Hemolytic streptococcus drugs |
| Erythema multiforme (p 3161 and 4323) | Hemolytic streptococcus drugs etc |
| Peroxydase hemoglobinuria (p 1075) | Cold plus syphilis |

NERVOUS SYSTEM

| | |
|----------------------------------|---|
| Encephalopathies | Rabbit vaccine and various viruses including those of chickenpox measles small pox etc (pp 440 and 445) |
| Peripheral neuropathies (p 1489) | As Encephalopathies |
| Multiple sclerosis (p 1504) | ? |

RESPIRATORY SYSTEM

| | |
|-------------------------------------|--|
| Eosinophilic pneumonitis (p 4318) | Hemolytic streptococci and other unidentified allergens |
| Chronic pneumonitis (pneumonopathy) | Abacterial pulmonary manifestations in rheumatic fever tuberculosis and particularly fungus invasions such as actinomycosis blastomycosis coccidioidomycosis etc |
| Pleuritis (pleuropathy) | As Chronic pneumonopathy |

GENITO URINARY SYSTEM

| | |
|-------------------------------------|----------------------------|
| Chronic glomerulonephritis (p 2379) | Hemolytic streptococci etc |
|-------------------------------------|----------------------------|

SCLELETAI AND LOCOMOTOR SYSTEMS

| | |
|---|--------------------------------|
| Rheumatoid arthritis (p 2910 and 4502) | Hemolytic streptococci (?) etc |
| Eosinophilic granuloma of bone (p 2843) | ? |
| Gout (p 2867) | ? |

TECUMENTARY SYSTEM

| | |
|------------------------------|----------------------------------|
| Idiopathic pruritus (p 3178) | ? |
| Purpura (p 3423) | Hemolytic streptococci drugs etc |
| Erythemas (pp 3374 3377) | Hemolytic streptococci drug etc |
| Scleroderma (p 3427) | ? |
| Sarcoidosis (p 3271) | Tubercle bacilli (?) |

ACUTE HISTAMINE TYPE ALLERGIC HYPERSENSITIVITIES (*continued*)

| Clinical Syndrome | Usual Offending Allergen | Usual Shock Organ |
|------------------------------------|---------------------------------------|--|
| MISCELLANEOUS | | |
| Meniere's disease (p 1486) | Unknown | Internal ear (?) |
| Migraine (p 1506) | Digestants psychogenic | Cerebral blood vessels (?) |
| Epilepsy (p 1515) | Digestants psychogenic unknown | Central nervous system |
| Motion sickness (p 1487 3876) | Unknown (For treatment see p 4218) | Unknown |
| Gastro intestinal allergy (p 1787) | Food tulfs (For treatment see p 4329) | Gastro intestinal mucosa and musculature |
| Urinary allergy | Unknown streptococcus | Mucosa of bladder and urethra kidneys (acute nephritis p 2373) |
| Gynecologic allergy | Psychogenic unknown | Uterine musculature (dysmenorrhea) |

mental animal may be accomplished symptomatic relief is obtained to greater or lesser degree by use of adrenergens and antihistamines cures may follow elimination of offending antigen or desensitization (p 4191)

Exceptions Many claims in the previous paragraph require qualification. Thus in dermatitis medicamentosa due to ingested drug the portal of entry for offending antigen is not most affected and the shock organ usually is the skin in pollen hypersensitivities the character of the response may be independent of antigen and dependent on patient response for one sensitized individual may develop hay fever while another suffers a bronchial asthma. That there is more to histamine type hypersensitivity than mere liberation of histamine is attested by failure of injected histamine to reproduce all clinical manifestations and by failure of adrenergens and antihistamines completely to palliate much less cure presenting clinical disturbances

CHRONIC TUBERCULIN TYPE ALLERGIC HYPERSENSITIVITIES

The chronic tuberculin type allergic hypersensitivities, otherwise variegated and puzzling, have the undernoted characteristics in common suggesting their unitarian origin

- 1 Etiology and pathogenesis otherwise unknown
- 2 Clinical manifestations usually suggest the operation of an infectious element
- 3 Failure to respond to antibiotic agents
- 4 Manifestations not palliated by antihistamines or adrenergens
- 5 Negative bacteriologic and serologic findings
- 6 In many a precedent history of upper respiratory infection
- 7 In many a history of antecedent sensitivity reactions to food drugs pollens etc

Pathogenesis The evolution and pathogenesis of tuberculin type hypersensitivity is suggested by study of phases of the rheumatic fever syndrome

EVOLUTION OF HYPERSENSITIVITY PHENOMENA IN RHEUMATIC FEVER

| | Pathogenesis | Clinical Manifestations |
|------------------|---|--|
| <i>Phase I</i> | Introduction of antigen or allergen. Streptococcal invasion of tissue | Symptoms of upper respiratory infection intensity varying from subclinical to fulminant |
| <i>Phase II</i> | Combined immunity and hypersensitivity response. Development of anti streptolysin, perhaps of other immune bodies and of tuberculin hypersensitivity | Period of latency or incubation. Apparent recovery |
| <i>Phase III</i> | Reexposure to even minute amounts of streptococcal antigen (tuberculin type hypersensitivity) | Appearance of rheumatic syndrome with aseptic pyrexia leukocytosis increased sedimentation rate arthropathy cardopathy dermatoses and sterile blood cultures |
| <i>Phase IV</i> | Spreading of hypersensitivity response to new allergen. Treatment with sulfonamide for example reproducing or intensifying tuberculin type hypersensitivity reactions | Intensification of symptoms with evidences of disturbances in collagen tissues (subcutaneous nodules) peripheral vessels (periarteritis nodosa) skin (purpura erythemas etc) and heart (endocarditis myocarditis pericarditis etc) |

The translation of these hypothetical considerations into terms of reality receives consideration in sections dealing with Prognosis (p 4174) and Therapy (p 4175)

ACUTE HISTAMINE TYPE AND CHRONIC TUBERCULIN TYPE ALLERGIC HYPERSENSITIVITIES

Similarities and Dissimilarities Because of the more obvious causal relationship between introduction of offending allergen and production of clinical manifestations acute histamine type allergic hypersensitivities have been more readily recognized and accepted than those due to chronic tuberculin type allergic hypersensitivity. Despite obvious differences in clinical manifestations of acute and chronic syndromes each probably represents a stage in a single process each is the result of a perversion of mechanisms of body defense (p 4165) either may be produced by a single antigen such as heterologous serum which causes a transitory urticaria in one patient and a syndrome identical with periarteritis nodosa in another many patients with chronic hypersensitivity disorders give histories or evince evidences of precedent or concurrent histamine type hypersensitivities and finally many patients with acute histamine type hypersensitivities later in life develop the syndromes of chronic tuberculin type hypersensitivity such as rheumatoid arthritis diffuse lupus erythematosus etc

In *acute histamine type allergic hypersensitivity* symptoms occur relatively shortly after introduction of antigen injection of serum produces anaphylactic shock inhalation of pollen results in seasonal vaso

Disseminated lupus erythematosus (p 3399 and 4389)
 Dermatomyositis (p 3373)
 Sterile dermatoses

Specific skin test

Hemolytic streptococcus drugs (?) etc
 ?
 Tuberculids (pp 3265 3299) leprids (p 273) syphilids (pp 334 3280 3285) dermatophytids (p 3299)
 Tuberculin (p 264) brucellergin (p 314)
 Frei test (p 471) trichinella (p 541)
 echinococcus test (p 1983) histoplasmin test (p 504) coccidioidin test (p 499)
 actinomycin test (p 489) blastomycin test (p 493) Ducey test (p 299)

Pathology The pathological changes in acute allergies are transitory and evanescent. They consist essentially of edema and eosinophilia each of which is rapidly reversible.

The pathology of human tuberculin type hypersensitivity has been studied by Rich who examined the tissues of patients who died shortly after the onset of systemic anaphylactic reactions due to administration of serum sulfonamide and the two antigens combined i.e. patients with serum sickness treated with sulfonamide.

Irrespective of sensitizing agent Rich found diffuse lesions throughout the body. These were characterized by swelling, fragmentation and degeneration of collagen fibers, focal circumferential infiltration of vessels by mononuclears and eosinophiles, endothelial necrosis, loss of the elastic layer, endovascular thrombosis, infarction of dependent tissues, aneurysm formation and rupture of necrotic segments of vessels.

Lesions of *peripheral vessels* typified periarthritis nodosa. *cardiac findings* strongly suggested the rheumatic complex, even to duplication of Aschoff bodies and the Anitschkow myocyte. *pulmonary lesions* revealed eosinophilic pneumonitis. *cutaneous phenomena* included erythemas, purpuras and lupus erythematosus. *articular and periarticular changes* resembled those of rheumatic fever and rheumatoid arthritis and changes in the *central nervous system* suggested non-suppurative encephalopathies as seen following administration of rabies vaccine and vaccine virus.

The pathologic data become even more impressive since each simulated disease may present clinical manifestations identical with those regarded as specific to the others. Thus *rheumatic fever* often is associated with arthropathy, cardiopathy, pneumonitis, erythemas, purpuras and chorea. *periarthritis* with carditis, pneumonitis, glomerulonephritis, purpuras, urticarias and eosinophilia. *diffuse lupus purpura* and *erythema multiforme* with arthropathies, cardiopathies and nephropathies. *rheumatoid arthritis* with endocarditis, subcutaneous nodules, scleroderma and serous effusions.

Lesions similar to those produced by hypersensitivity to heterologous serums and bacteria also may be caused by sulfonamide, iodide, salicylate, phenolphthalein, dilantin, acetylsalicylic acid and thiourea. The insidious menace of tuberculin hypersensitivity looms darkly, warning the therapist of the hazard of prescribing potential allergens for the hypersensitive.

Fig 93 p 554) scratch and intradermal tests (p 557 Fig 34 p 263 Fig 94 p 555 and Fig 95 p 558) and the passive transfer reaction of Prausnitz Kustner (p 559)

The technics of these tests have been described in detail (p 555-561) but the attention of the reader is again drawn to the interpretation of findings (p 561) False negative and false positive responses may be obtained to the confusion of those who accept tests unequivocally without due consideration to clinical findings

Inferential Data Less scientific but at least equally valuable diagnosis of hypersensitivity is obtained from inferential data gleaned from history elimination tests and results of therapeutic trials

History The presence of hypersensitivity may be suggested by the history of repeated untoward responses after exposure to a particular offending allergen There would seem little need to add corroborative evidence to statements that the nose ran and became stuffed and the eyes teared annually at pollination time that ingestion of straw berries was consistently followed by hives that vomiting occurred immediately after ingestion of milk or milk products that exposure to horses produced shortness of breath and wheezing or that ingestion of chocolate was followed by headache

Elimination Tests Negative evidence of equal value may be obtained from elimination tests particularly in dealing with alimentary antigens which may shock the digestive tract but not the portion of skin that is tested (False negative test) Freedom from symptoms on Elimination Diets (p 562) and their reappearance on resumption of full diet or a meal inclusive of suspected offending allergen represent inferential diagnosis of the highest order of probability

Therapeutic Tests Finally inferential data may be obtained from therapeutic trials Palliation of presenting symptoms by antihistamines (p 4210) suggests that an attack of rhinitis for example is more likely a hypersensitivity response than an infective type of inflammatory reaction Many patients who state that they have recurrent colds obtain relief when given histamine antagonist indicating that the local inflammatory process in the nasal mucous membranes was more likely in the nature of an eosinophilic than a neutrophilic response

In chronic allergic sensitivities palliation by steroids possessing adrenocortical activity similarly suggests the nature of the tissue disturbance

Inferential Data versus Skin Tests It is our opinion that the value of inferential data exceeds that of skin reactions When inferential data are completely conclusive cutaneous reactions are gratuitous and not without danger (p 4164) When inferential data are positive and skin reactions negative the latter should be regarded as false Contrariwise in the presence of a positive cutaneous reaction but negative inferential data the skin test should be regarded as false positive

Course of Allergic Hypersensitivity

The course of acute histamine-type hypersensitivity is dependent almost entirely on exposure to offending allergen In the pollinoses

motor rhinitis ingestion of sensitizing foods such as strawberries or fish produces urticaria or angioneurotic edema ingestion of cow's milk results in infantile eczema contact with poison ivy produces dermatitis venenata administration of certain drugs gives rise to cutaneous eruptions classified as dermatitis medicamentosa The clinical manifestations simulate those that may be produced by ingestion of histamine Specific antibody is demonstrable in the circulating fluid and can be transferred to experimental animals (Prausnitz Kustner reaction) Pathologic features almost invariably reversible include increased permeability of vessels exudation eosinophilic infiltration and spasm of smooth muscle The process relatively transitory is palliated by antihistamines and adrenergics and can be recreated by fresh exposure to offending antigen

Chronic tuberculin type hypersensitivity reactions are featured by incubation periods of variable duration separating causal phenomena and clinical manifestations Resultant symptoms are insidious in origin and more wide spread Pathologic features are noted principally in collagen interstitial tissues and vascular endothelium The dominant wandering cell is the monocyte rather than the eosinophile Specific circulating antibody is difficult if not impossible to demonstrate Passive transfer cannot be accomplished The symptoms are not duplicated by histamine injection symptomatic relief is not afforded by antihistamines or adrenergics but there is more than a glimmering of hope that palliation will be afforded by administration of steroids possessing adrenocortical activity

HISTAMINE TYPE *versus* TUBERCULIN TYPE HYPERSENSITIVITY

| | Histamine type Hypersensitivity | Tuberculin type Hypersensitivity |
|---|---|--------------------------------------|
| Response | Immediate | Period of incubation |
| Specific antibody | Demonstrable | Not demonstrable |
| Precipitin test | Demonstrable | Not demonstrable |
| Passive transfer | Demonstrable | Not demonstrable |
| Local inflammation | Evanescent | Delayed insidious and progressive |
| Smooth muscle | Spasm | No response |
| Duplicated by histamine | Yes | No |
| Mechanism | Liberation of histamine or histamine like substances | Unknown |
| Relief from adrenergics and antihistamines | Yes | No |
| Relief from adrenal cortical hormone etc | Yes | Yes |

Diagnosis of Allergic Hypersensitivities

The diagnosis of allergic hypersensitivities may be definitive or inferential In acute histamine type reactions definitive diagnosis more often prevails In chronic disorders recognition of the nature of the process is most always inferential

Definitive Diagnosis Definitive diagnosis of allergies rests on contact or patch tests (p 556 Fig 35 p 264) ophthalmic tests (p 556

- latency or incubation This may last for days weeks years or decades only to erupt as in the Koch phenomenon (p 4168)
- 5 Hypersensitivity to a single antigen is not an unique phenomenon Hypersensitivity also may be exhibited to other substances including non bacterial antigens (products of industrial chemistry cosmetic or pharmacologic agents) Under these circumstances patient or physician may intensify or activate hypersensitivity responses by self medication or prescription of seemingly indicated medicaments such as salicylate iodide or sulfonamide
- Infection of the hypersensitive patient with any other micro organism capable of producing tuberculin type hypersensitivity may activate manifestations due to the primarily sensitizing organism Hence the prognosis of superimposed infection must be as guarded as the prognosis for reinfection by originally sensitizing allergen

Treatment of Allergic Hypersensitivities

With introduction of powerful histamine antagonists (p 4210) and of steroids possessing adrenocortical activity reassessment of therapeutic principles in the management of allergic hypersensitivities (pp 563-565) is mandatory The discussion which follows is conducted more or less along broad general lines For specific information concerning practical management of definitively recognized allergic hypersensitivities consult the following syndromes which are discussed in this volume

| | |
|----------------------------------|-----------------------------------|
| Anaphylactic Shock | Peri arteritis Nodosa |
| Atypical Verrucous Endocarditis | Physical Allergy |
| Bacterial Allergy | Pollen Allergy |
| Bronchial Asthma | Psychogenic Allergy |
| Contact Allergy | Purpuras |
| Dermatomyositis | Rheumatoid Arthritis |
| Disseminated Lupus Erythematosus | Rheumatic Fever |
| Drug Allergy | Serum Sickness |
| Erythema Multiforme | Thrombo angitis Obliterans |
| Food Allergy | Urticaria and Angioneurotic Edema |

General Principles of Treatment

Therapeutic objectives in the management of hypersensitivities include the following principles

- 1 conversion of hypersensitivity to active immunity
- 2 elimination of bacterial sensitizing agents
- 3 elimination of non bacterial sensitizing agents
- 4 substitution of a less sensitizing antigen for one known to be highly sensitizing
- 5 desensitization or hyposensitization
- 6 psychotherapy
- 7 palliation with adrenergens

exacerbations correspond to seasonal variations in the pollen content of atmospheric air for example Psychogenic factors probably cause quantitative variations in tissue response but the primary determinant is somatic

The courses of tuberculin type hypersensitivity syndromes vary as widely as the pathologic manifestations and as lists of potentially offending allergens The primary phase (as in rheumatic fever) may be subclinical or *fulminant* under either circumstance the process may be self limited intermittent or progressive Mild manifestations occur in those who compose the vast reservoir of unreported and unrecognized rheumatic fever the more seriously involved make up hospital populations upon which statistics of rheumatic fever are based (p 191) Tuberculin type hypersensitivity may be limited to a single shock organ such as the skin in uncomplicated purpuras but it is more likely that careful clinical study will reveal generalized changes in other organs of the body

Most characteristically tuberculin type sensitivities exhibit periods of exacerbation and remission Exacerbations undoubtedly are due to fresh exposure to offending allergen (as hemolytic streptococcus in rheumatic fever) or to another offending allergen (as sulfonamides in the treatment of serum sickness or iodides in fungus infections)

Prognosis in Allergic Hypersensitivities

Prognosis in acute allergies is most deceptive In fatal anaphylactic shock death of the patient may occur before the needle introducing offending allergen can be withdrawn by contrast the majority of acute histamine type allergies abate spontaneously leaving no chronic tissue manifestations of their presence

So greatly do imponderables outweigh ponderables in prognosticating tuberculin type hypersensitivity reactions that the draft of a definitive pronouncement would challenge even those astute lawyers who write the finely printed provisions of legal documents

The optimist who gives a favorable prognosis because of seemingly mild initial clinical manifestations may later be condemned as ignorant or negligent when the child with subclinical rheumatic fever after a decade is found to have a tight mitral stenosis On the other hand the more pessimistic physician (who views with alarm a seemingly fulminating streptococcal infection and predicts later invalidism and chronic illness) may be labeled an alarmist if the hypersensitivity reaction is sharply self limited to a single bout without chronic sequels

To guide the practitioner in prognosis of the *tuberculin type hypersensitivity syndromes* the following axioms are suggested

- 1 Intensity of Phase I gives no indication of the gravity of long term prognosis
- 2 Bacteriologic virulence of invading micro organisms gives no clue to the severity of tuberculin type hypersensitivity reactions
- 3 Intensity of local inflammatory reactions gives no indication of extent of long term damage to the patient
- 4 Guard against a sense of false security during the second phase of

this routine even in the face of seemingly discouraging progress

- 10 Since it is impossible at the time to determine whether any given upper respiratory infection constitutes Phase I of the tuberculin hypersensitivity reaction follow suggestion I in the treatment of each upper respiratory infection that occurs in each patient with a previous history of histamine type hypersensitivity tuberculin type hypersensitivity or any of their component syndromes

Elimination of Nonbacterial Sensitizing Agents Nonbacterial sensitizing agents appear provocative in many acute and chronic hypersensitivities. The role of pollen food drugs serums etc in the pathogenesis of acute reactions has been previously described. Less apparent has been the relationship of allergen to chronic syndromes. However the work of Rich and others demonstrates that lesions of periarthritis nodosa rheumatoid arthritis rheumatic fever and glomerulonephritis may be produced experimentally as well as clinically by exposure of the sensitive to serums and drugs particularly sulfonamide salicylates iodide dilantin thiourea etc. Attacks of paroxysmal hemoglobinuria may be induced in the sensitized syphilitic through the agency of cold damaged lens protein menaces the contralateral eye in sympathetic ophthalmia tobacco is suspect in thrombo-angitis obliterans and solar energy appears noxious to the photosensitized patient with disseminated lupus erythematosus.

In most instances elimination of specific non bacterial sensitizing agents presents no formidable problem. The patient with thrombo-angitis obliterans can get along very well without tobacco the photosensitized can avoid solar energy and sufferers from paroxysmal hemoglobinuria can be protected against cold until such time as the underlying syphilis is controlled or eliminated. Much more formidable is the problem in sympathetic ophthalmia. Here it is necessary to perform enucleation of the injured eye in order to eliminate lens protein that menaces the healthy contralateral eye (p 1569).

Since hypersensitivity apparently spreads the patient with any allergic syndrome requires protection against all known offending allergens whether bacterial or non bacterial. Thus it would seem reasonable to eschew common reactive substances such as pollens cosmetics chemicals sunlight and particularly the nonessential drugs which have been shown experimentally or clinically to be capable of inducing tuberculin type hypersensitivity. There is no great problem attached to avoidance of phenolphthalein as a cathartic dilantin as an anti-epileptic or thiourea as an antithyroid preparation but the cases of iodide salicylate and sulfonamide require more elaborate consideration.

Iodide

Older clinicians for many years have warned against use of iodides in tuberculosis. They observed instances in which administration of iodide was followed by exacerbation breakdown of caseous lesion, and

8 prophylaxis and palliation with antihistamines

9 prophylaxis and/or palliation with adrenal cortical hormone
pituitary adrenocorticotrophic factor compound E etc

Conversion of Hypersensitivity to Active Immunity The recent suggestive relationship between adrenal cortical hormone and allergic hypersensitivities raise the first glimmering hopes for actual correction of those perversions of mechanisms of bodily defense responsible for production of these strange disorders. Should it prove that cortical hormone or pituitary adrenocorticotrophic factor determines cellular fixation or release of antibody the fundamental basis for hypersensitivities may be eliminated by administration of the specific endocrine product or its substitutes such as cortisone (p 4145)

Elimination of Bacterial Sensitizing Agents In certain hypersensitivities particularly chronic tuberculin type varieties (rheumatic fever purpura erythema multiforme etc) there is a definite history of precedent upper respiratory infection. In rheumatic fever for example the invading sensitizing micro organism presumably is a hemolytic streptococcus. Clearly then the prime aim of therapy is elimination of the offending bacterium.

Using rheumatic fever as the prototype of tuberculin type hypersensitivities resulting from bacterial agents the following measures are advocated for prevention and treatment of tissue damage

- 1 In Phase I institute immediate treatment with large doses of penicillin (a feebly sensitizing antibiotic) to eliminate hemolytic streptococci particularly from mucous membranes of upper respiratory tract
- 2 Give concurrent antihistamine to prevent histamine type hypersensitivity reactions that occur in 10 to 15 per cent of sensitized patients who receive penicillin
- 3 Treat subclinical and mild infection as vigorously as the fulminant
- 4 Continue penicillin therapy well beyond the demonstrably infective period i.e. for at least two weeks after clinical manifestations have subsided
- 5 Continue antihistamine for at least two weeks longer than penicillin
- 6 When available supplement penicillin antihistamine therapy with adrenocortical hormone or one of its allied preparations such as cortisone (compound E)
- 7 In Phase II maintain the antistreptococcal attack by regular and repeated courses of penicillin. Oral preparations may be prescribed for the first week in each month antihistamine may be given concurrently and for an additional week or approximately the first half of each month
- 8 During Phase II search for foci of infection particularly in the upper respiratory tract. If these harbor hemolytic streptococci consider surgical interference
- 9 In Phase III with appearance of symptoms of rheumatic fever resume the routine of Phase I with clear understanding that procedures are prophylactic rather than palliative. Persist with

this routine even in the face of seemingly discouraging progress

- 10 Since it is impossible at the time to determine whether any given upper respiratory infection constitutes Phase I of the tuberculin hypersensitivity reaction follow suggestion 1 in the treatment of each upper respiratory infection that occurs in each patient with a previous history of histamine type hypersensitivity tuberculin type hypersensitivity or any of their component syndromes

Elimination of Nonbacterial Sensitizing Agents Nonbacterial sensitizing agents appear provocative in many acute and chronic hypersensitivities. The role of pollen food drugs serums etc in the pathogenesis of acute reactions has been previously described. Less apparent has been the relationship of allergen to chronic syndromes. However the work of Rich and others demonstrates that lesions of periarteritis nodosa rheumatoid arthritis rheumatic fever and glomerulonephritis may be produced experimentally as well as clinically by exposure of the sensitive to serums and drugs particularly sulfonamide salicylates iodide dilantin thiourea etc. Attacks of paroxysmal hemoglobinuria may be induced in the sensitized syphilitic through the agency of cold damaged lens protein menaces the contralateral eye in sympathetic ophthalmia tobacco is suspect in thromboangitis obliterans and solar energy appears noxious to the photosensitized patient with disseminated lupus erythematosus.

In most instances elimination of specific non bacterial sensitizing agents presents no formidable problem. The patient with thromboangitis obliterans can get along very well without tobacco the photosensitized can avoid solar energy and sufferers from paroxysmal hemoglobinuria can be protected against cold until such time as the underlying syphilis is controlled or eliminated. Much more formidable is the problem in sympathetic ophthalmia. Here it is necessary to perform enucleation of the injured eye in order to eliminate lens protein that menaces the healthy contralateral eye (p 1569).

Since hypersensitivity apparently spreads the patient with any allergic syndrome requires protection against all known offending allergens whether bacterial or non bacterial. Thus it would seem reasonable to eschew common reactive substances such as pollens cosmetics chemicals sunlight and particularly those nonessential drugs which have been shown experimentally or clinically to be capable of inducing tuberculin type hypersensitivity. There is no great problem attached to avoidance of phenolphthalein as a cathartic dilantin as an antiepileptic or thiourea as an antithyroid preparation but the cases of iodide salicylate and sulfonamide require more elaborate consideration.

Iodide

Older clinicians for many years have warned against use of iodides in tuberculosis. They observed instances in which administration of iodide was followed by exacerbation breakdown of caseous lesions and

cavitation. Similar intensification of clinical manifestations has been reported by physicians of wide experience in the management of deep fungus infections such as actinomycosis blastomycosis etc. In these latter instances there is unanimity of opinion to defer iodide therapy until the patient has been desensitized with specific vaccine (p. 4378).

In contrast to this frequently observed and generally credited menace of iodide therapy in the infections there is currently no comparable evidence to sustain the belief that iodides are possessed of significant antibiotic activity. In consequence it would appear potentially hazardous and therapeutically unpromising to recommend iodide therapy in infection unless all other efforts have failed and the risk appeared warranted by the unfavorable course of the disease.

Indications for iodide therapy in the arthropathies appear to be even less impressive than in the specific infections. So far as is known iodides exert no consistently beneficial effect in any of the various types of arthritis whether given by mouth, inunction, iontophoresis or vein. In view of the suspicion that rheumatic fever and rheumatoid arthritis are tuberculin type hypersensitivities it would appear poor judgment to administer a preparation that has so little therapeutic potential but which is capable of eliciting tuberculin type hypersensitivity.

Salicylate

The salicylates have slightly more to recommend them therapeutically than the iodides. Pharmacologically they possess palliative value allaying fever, pain and swelling particularly in rheumatic fever. Nevertheless for all the years that salicylates have been administered there has never been sustained evidence that they have specific efficacy. Whether given in small or large doses or by whatever route most impartial observers agree that the ultimate course of rheumatic fever remains unchanged.

In arriving at his decision whether to use or avoid salicylates in rheumatic fever the clinician must weigh immediate symptomatic relief against the potential of tuberculin type hypersensitivity. It is our personal judgment to withhold the drug pending further investigation. Defenders of continued salicylate therapy advance the argument that (1) symptomatic relief is prompt (2) salicylates may prevent hypersensitivity reactions experimentally as evidenced by experiences with typhoid vaccine and serum injections and (3) their participation in tuberculin type hypersensitivity reactions must be statistically very rare. Nevertheless we prefer to palliate by less potentially hazardous means using hydrotherapy for antipyresis, application of heat and occasional doses of demerol if necessary for analgesia.

If the case for salicylate is assailable in rheumatic fever, certainly it is even weaker in rheumatoid arthritis and other arthropathies. In these conditions palliative effects are much less dramatic than in rheumatic fever and there is no claim whatsoever for specificity. Therefore it is our judgment that it is wiser to palliate the complaints of rheumatoid arthritis and other arthropathies with preparations having lesser potential for sensitization than salicylate.

Sulfonamide

The extraordinary antibiotic properties of sulfonamides are elsewhere discussed (p 4548) In this place attention is drawn to their sensitizing potentialities

The case against sulfonamides has been best summarized by Rich Harvey Lectures 1946

Death from serum sickness itself rarely if ever occurs However the use of sulfonamides in conjunction with foreign antibacterial serum can serve to prolong life sufficiently to permit the development of serum sickness in patients who will eventually die of their infection in spite of the treatment Furthermore shortly after the introduction of the sulfonamides in therapy it was pointed out that these drugs can produce a reaction altogether like that of serum sickness and further studies have shown that the sulfonamides can attach themselves to plasma protein and that the complex so formed can act as an antigen to sensitize the body anaphylactically to the sulfonamide radicle The continued administration of the sulfonamide after a sulfonamide hypersensitive reaction has appeared can markedly intensify the reaction and cause a fatal outcome As a result of these unfortunate accidents the widespread use of the sulfonamides greatly increased the opportunity to study the effects of the serum sickness type of anaphylactic reaction upon the tissues and in a study of a series of patients who died shortly after the onset of this type of hypersensitive reaction whether to foreign serum or to sulfonamides we found at autopsy typical fresh lesions of peri arteritis nodosa

A further confirmation of Rich's conclusions and observations are figures of the incidence of peri arteritis nodosa in autopsies done at the Johns Hopkins Hospital over a period of thirty years Between 1916 and 1936 there were performed 10 016 autopsies and six of these presented lesions of peri arteritis nodosa (0 06%) in the ten year period following introduction of sulfonamides (1936 to 1946) 5 207 autopsies were performed with 38 instances of peri arteritis nodosa (0 7%) a more than tenfold increase in the fatal incidence of this disorder

Were sulfonamide the only available remedy in the treatment of bacterial disease the hazard of tuberculin type hypersensitivity reaction would have to be overlooked Fortunately the physician may choose between sulfonamide and penicillin in the vast majority of infections Since there is as yet no evidence that penicillin has serious potential for chronic sensitization it should be substituted for sulfonamide whenever possible but particularly in the treatment of streptococcal diseases of infancy and childhood (p 4533)

Substitution of a Less Sensitizing Antigen In previous paragraphs which deal with the principle of elimination of potentially sensitizing preparations particularly drugs the policy of substitution of a less sensitizing antigen is illustrated Thus penicillin a feebly sensitizing antibiotic is preferred over sulfonamide which has demonstrably hypersensitizing properties Insulin of beef origin may be replaced by insulin made from pigs etc

The sensitizing potential of sulfonamide is just one of several reasons for use of penicillin in each instance in which either may be indicated (p 4455). Avoidance of sulfonamide and choice of penicillin is mandatory under the following circumstances

- 1 infection is caused by a known sensitizing organism : e *hemolytic streptococcus*
- 2 the host is a sensitized individual with a history or clinical manifestations of histamine type or tuberculin type hypersensitivity syndromes
- 3 the host reports previous sensitizing phenomena as a result of sulfonamide administration serum injections etc

Desensitization or Hyposensitization Desensitization or hyposensitization in acute allergies using non bacterial antigens as in pollinosis is universally accepted (p 4477). Many attempts also have been made to increase host immunity and desensitize against specific proteins of invasive micro organisms e.g. tuberculin luetin brucellergin actinomycin blastomycin trichophyton etc

In contrast to reasonably successful pollen desensitization even enthusiasts for bacterial hyposensitization report inconsistent results and warn against untoward reactions unless treatment is initiated and maintained with sub reactive amounts of antigen

It is our current opinion that injections of bacterial antigen given for purposes of altering hypersensitivity reactions be reserved for those diseases for which we now possess no potent antibiotic. This policy eliminates from the field of therapy luetin brucellergin trichophyton actinomycin etc. Only in the management of diseases for which we do not have effective antibiotic therapy (such as blastomycosis for example) is vaccine desensitization worthy of consideration more for lack of something better to do than for anticipated results

Psychotherapy All hypersensitivities have psychogenic overtones just as are encountered in most recurrent crippling or progressive illnesses. Only rarely is allergic hypersensitivity seemingly the direct result of psychic trauma

The complete practitioner seeks to palliate psychogenic overtones particularly in crippling diseases such as rheumatoid arthritis or in frightening syndromes such as bronchial asthma. When methods of non technical psychotherapy (p 1316) fail reference to the trained psychiatrist for formal therapy is seriously considered as a joint enterprise between specialist and practitioner

Palliation by Adrenergics Until introduction of antihistamines and steroids principal reliance in the treatment of acute hypersensitivities was placed on adrenergics (p 4158). Injections of epinephrine oral administration of ephedrine and sprays of other sympathomimetic amines (privine neosynephrin etc) afforded transitory but welcome relief

Availability of the new modalities has not by any means eliminated adrenergics from the therapeutic armamentarium. Antihistamines and adrenergics are used concurrently and synergistically (p 4210) and

new adrenergic bronchodilators effective when given sublingually and orally have greatly simplified symptomatic management of bronchial asthma (p 4270)

Prophylaxis and Palliation by Antihistamines Antihistamines have demonstrable palliative effect in histamine type hypersensitivities. They have no such clear-cut efficacy in tuberculin type hypersensitivities where they appear to alter presenting clinical manifestations little if at all.

Despite lack of apparent symptomatic relief antihistamines merit prescription in tuberculin type hypersensitivities for potential long term prophylactic effects. Since they do not have significant toxicity it is our personal opinion that they warrant use according to the under noted guiding principles:

- 1 prescribe antihistamines routinely in the early phase of any clinical syndrome possibly caused by a potentially sensitizing micro-organism (p 4167)
- 2 prescribe antihistamine routinely in every infection of the hyper sensitive patient (p 4210)
- 3 prescribe antihistamines concurrently with therapeutic products that may possibly produce hypersensitivity reactions (serums iodide salicylate dilantin thiourea and antibiotics especially sulfonamide)

Prophylaxis and/or palliation with Adrenal Cortical Hormone Pituitary Adrenocorticotrophic factor Compound E etc Interest in the treatment of tuberculin hypersensitivities has been stirred by new reports on the efficacy of adrenocortical hormone its pituitary adrenocorticotrophic factor and substitution steroid products such as cortisone or Compound E (17 hydroxy 11-dehydro corticosterone). Hench of the Mayo Clinic demonstrated extraordinary improvement in rheumatic fever and rheumatoid arthritis by daily injections of compound E. This substance produced almost immediate symptomatic improvement of transitory duration although daily injections were required to prevent the patient from relapsing to pretreatment status.

The theoretical importance of Hench's observation is of first magnitude since it forges a link between hypersensitivity and endocrine activity. It has been long recognized that adrenal cortical hormone demonstrably increases output of antibody. The new work suggests that it may also influence the *quality* of the response of defense mechanisms. If it can be demonstrated that deficiency of adrenocortical secretion results in development of hypersensitivity and that contrariwise an adequate supply of adrenal cortical substance encourages mechanisms of active immunity then cortisone may not only palliate tuberculin type hypersensitivities but it should also prevent their occurrence. It would be necessary only to demonstrate that adrenal cortical hormone influences parent cells to shed antibody (so that union between antigen and immune substance occurs extracellularly rather than intracellularly) in order to implement the hope that prophylactic therapy is an impending achievement.

AMEBACIDES

THERAPEUTICS OF AMEBACIDES

AMEBACIDAL ACTIVITY

| Products | Intra intestinal | Extra intestinal | Comments |
|---|---------------------|---------------------|--|
| ALKALOIDS | | | |
| Ipecac USP | Feeble | Feeble | Objectionable obsolete |
| Emetine hydrochloride USP (p 529) | Fair | Excellent | 91% of patients develop toxicity including local pain weakness precordial pain fall of blood pressure diarrhea nausea dyspnea, tachycardia dizziness head ache and changes in the electrocardiograms May be replaced by chloroquine or aureomycin |
| Ampuls 1 cc — 65 mg (Abbott Lilly Merck P D Upjohn) | | | |
| Enteric coated emplets 20 mg (Lilly) | | | |
| PENTAVALENT ARSENICALS (p 4230) | | | |
| Acetarsone NF (Stovar sol) | Good | Fair | Carbarsone most effectual and least toxic but may give arsenical reactions (p 122) |
| Carbarsone USP | Good | Fair | |
| Phenarsone NNP (Al darsone) | Good | Fair | |
| CC 914 | Promising | Promising | Thioarsenites (p 4232) su- perior to their parent sub- stance carbarsone and less toxic but not yet commer- cially available |
| CC 1037 | | | |
| OXYQUINOLINES (p 4443) | | | |
| Chiniofon USP (Anayo din Yaten Quinoxyl) | Good | Fair | No significant toxicity but also less efficacious than originally believed Chinio- fon and vioform may cause diarrhea on second or third days Diodoquin preferred |
| Diodoquin NNR | | | |
| Vioform NNR | | | |
| BISMUTH SUBCARBONATE (p 4255) | | | |
| | Poor | Poor | Obsolete |
| PARA AMINO BENZOIC ACID (PABA) NNR (p 4445) | | | |
| | Promising | Promising | Effective for both intra and extra intestinal invasions Toxicity negligible |
| CHLOROQUINE NNR (Aralen) | | | |
| | Promising | Promising | Considered an effective sub- stitute |
| PENICILLIN (p 4447) | | | |
| | Feeble | Feeble | Investigational Assist ame- bacides by elimination of secondary invaders |
| AUREOMYCIN (p 4241) | | | |
| CHLORAMPHENICOL (p 4279) | | | |
| | Promising | Promising | More effective clinically than in vitro Highly suc- cessful in limited series |
| WIA (Bismuth and Arsenic in organic combination) | | | |
| | Encouraging | — | Daily doses of 1.5 gm for 7 days to eliminate cysts (Berberian) |
| BACITRACIN (p 4247) | | | |
| | Encouraging | — | 40 to 160 000 units orally for twenty days |

AMEBIASIS

[Amebic Dysentery]

Principles of Diagnosis and Treatment

1 An estimated 5 to 10 per cent of the population of North America harbor *Endameba histolytica*. In urban communities the figure is considerably below the average but among underprivileged dwellers in rural areas the percentage may approximate 20 or even 30. For the United States of America the numbers of citizens harboring *E. histolytica* are thought to be between 11 and 25 million.

2 Most individuals with *E. histolytica* in their stools are asymptomatic carriers; the next largest group suffers from atypical clinical amebiasis later described; only a very small number of the infected give evidences of classical amebic dysentery (p. 523).

3 Whether carriers or sufferers from typical or atypical amebiasis the diagnosis rests on identification of trophozoites or cysts in stools (Fig. 87 p. 527) or in tissues (Fig. 86 p. 526). In stool specimens pathogenic *E. histolytica* requires differentiation from fecal nonpathogens such as *E. coli*, *E. nana*, *I. butschlii* and *B. fragilis* (Table 29 p. 528).

4 At Tulane University School of Tropical Medicine the following routine is recommended for detection of *E. histolytica*:

- (a) Examine at least three normally passed stools.
- (b) Give a saline cathartic the evening preceding stool collection. Examine the first specimen passed the next morning.
- (c) Give two enemas each consisting of 1000 cc. of physiologic saline solution. Collect the last portions of the returns from the second enema and examine microscopically.
- (d) Following the second saline enema insert a sigmoidoscope and aspirate fecal material for microscopy.
- (e) Examine portions of the fresh specimens both stained and iodine-stained. Place a representative fleck of feces or mucus thoroughly mixed with a drop of physiological saline on a clean microscopic slide. Spread the film over an area of 2 inches. Cover one half of the film with a cover glass. To the other half add 1 drop of iodine and apply the cover glass. Both halves of the slide are then examined microscopically.
- (f) If direct examination fails to disclose organism and the clinical suspicion of amebiasis is strong send a portion of the stool to the clinical pathologist for concentration and examination by such methods as the zinc sulfate centrifugal flotation technic and by preparing of fixed smears stained with iron and hematoxylin.
- (g) Asymptomatic carriers are detected only by stool examination. For the most part their specimens contain only cysts. However if these are not discovered and eliminated the carrier later may develop overt clinical manifestations but more significantly he may transmit the disease to others.
- (h) Next to carriers in numbers the largest group of patients infected with *E. histolytica* present atypical and subclinical

manifestations Most commonly observed symptoms and signs are constipation mild diarrhea inability to gain weight colicky pains in the lower abdomen particularly the right lower quadrant localized tenderness over the colon nausea anorexia capricious appetite frontal headache myalgia backache disturbed nocturnal sleep diurnal somnolence poor memory asthenia vasomotor disturbances nervousness tachycardia easy fatigue and loss of ambition

- (i) The classical textbook picture of amebic dysentery (p 524) is encountered least frequently of all
- (j) Whether the patient is a carrier or presents subclinical or active clinical manifestations of amebiasis and whether overt manifestations are mild or severe energetic treatment is required The roster of amebicides includes alkaloids pentavalent arsenicals oxyquinolines bismuth para aminobenzoic acid chloroquine and the antibiotics penicillin aureomycin and chloramphenicol Some amebicides as illustrated by ipecac and emetine have greater postabsorptive extra intestinal activity than direct intra intestinal efficacy others like pentavalent arsenicals and oxyquinolines are more effective in their actions on organisms in the intestinal tract than on those that have passed the intestinal barrier

5 The efficacy of amebicides is enhanced by simultaneous use of antibacterial agents Seneca estimates the total bacterial count of the stools is increased fifty fold in amebiasis Coliform bacilli are increased thirty fold and the numbers of these fecal organisms protect amebae against the specific Conversely antibacterial agents permit amebicides to exert their full specific effect and hence appear synergistic though they have no great demonstrable amebicidal activity Thalamyd aureomycin and penicillin have been used as convenient non toxic adjuvants to non arsenical amebicides

6 There is no lack of effectual amebicides (p 1529 and p 4182) Rather is the practitioner confused by the multiplicity of available remedies and the fact that authorities differ as to their relative efficacy for the most part using several simultaneously or serially in their treatment of mass infections

7 The ideal amebicide should possess the following qualifications

- (a) Potent amebicidal activity for organisms within the intestinal tract
- (b) Potent amebicidal activity for extra intestinal invaders particularly those which have penetrated solid organs such as the liver
- (c) Equally potent amebicidal activity against motile amebae trophozoites and cysts (Table 29 p 528)
- (d) Minimum toxicity for the host

8 The more recently introduced amebicides give promise of partial fulfillment of these exacting requirements Any one of these may eventually replace emetine and pentavalent arsenicals for extra intestinal activity thus eliminating the hazard of host toxicity Similarly any or

all may be used in combination with equally non toxic oxyquinolines for more effective intra intestinal amebacidal effect The choices of the practitioner who deals with an occasional infection are those preparations which possess minimum threat of host toxicity

Practical Management

PROPHYLAXIS

Chloroquine (Aralen) Give 1 tablet of 250 mg thrice weekly (Chloroquine also is a malaria preventive)

Diodoquin Order 3 tablets each of 210 mg 3 times daily for three weeks Begin a few days before entering the endemic area Prefer diodoquin over arsenicals because of its lesser toxicity Of the oxyquinolines it is the preparation of choice since chiniofon (anayodin yatren quinoxyl) and vioform frequently cause diarrhea medicamentosa on the second or third treatment day

Since neither diodoquin nor chloroquine has significant toxicity the two preparations can be given concurrently

ACTIVE TREATMENT OF INTESTINAL MANIFESTATIONS (CARRIERS ASYMPTOMATIC OR MILD ATYPICAL MANIFESTATIONS OR OVERT ACUTE OR CHRONIC AMEBIC DYSENTERY)

Immediate Care

1 Start with least toxic amebacide such as diodoquin 3 tablets of 210 mg each thrice daily for 3 weeks or chloroquine (Aralen) 1 tablet of 100 mg 3 times daily for two to three weeks

2 Combine amebacide with antibacterial agent capable of reducing the numbers of fecal bacteria If expense is a factor use thalamyd in doses of 3 gm 3 times daily concurrently If the expense is not prohibitive use aureomycin in a daily dose approximating 30 mg per kilogram of body weight (2 gm or 8 capsules for average adult weighing 150 lbs) Give the daily dose in 4 equally divided portions

Continuing Care (Favorable Course)

1 If clinical symptoms subside and the stools become negative continue treatment for the full two or three weeks Then give the patient a treatment holiday of a similar period of time re examine stools and suggest a second course of therapy if needed Should the second course fail to clear stools follow directions for unfavorable course

Continuing Care (Unfavorable Course)

1 If symptoms persist stools remain positive or clinical or bacteriologic relapse is encountered substitute another amebacide for diodoquin or chloroquine Until C C 914 and C C 1037 (thioarsenites) are commercially available use carbarone giving 1 tablet of 250 mg thrice daily for ten days

2 Continue oral anti infective agents for their effects on fecal contents using aureomycin or thalamyd

3 Supplement oral anti-infective agents by deposits of penicillin. Inject intramuscularly 600 000 units of procaine penicillin G in aqueous suspension or in oil with 2% aluminum monostearate. Maintain penicillin level with injections every second or third day depending on the type of vehicle employed.

4 Concurrently with penicillin give 200 mg of antihistamine using 4 daily doses of 50 mg each of pyribenzamine or benadryl to prevent hypersensitivity reactions.

EXTRA-INTESTINAL INFESTATION (PARTICULARLY LIVER ABSCESS)

Immediate Care

1 Inject 30 mg subcutaneously of emetine hydrochloride twice daily for eight to twelve days unless toxic symptoms develop sooner (p 529).

2 As an alternative providing the maximal concentration of emetine in the intestinal tract necessary to eradicate the parasite without producing toxic side effects, order enteric coated emulsions of emetine hydrochloride in 20 mg doses. Provide for a total daily dose of 60 mg twice daily for twelve days. Caution the patient to swallow the tablet whole.

3 On the third day of emetine treatment if there are no toxic manifestations supplement alkaloid with an oxyquinoline preferably diodoquin in doses of 3 tablets of 210 mg each daily for three weeks.

4 Concurrently with emetine-oxyquinoline give aureomycin or thalamyd orally for reduction in the numbers of fecal bacteria and deposit penicillin as previously described.

Continuing Care (Unfavorable Course)

1 If the above described combined attack fails, discontinue emetine and diodoquin.

2 Substitute carbarsone in the dose of 250 mg tablets thrice daily for ten days.

3 Continue oral administration of thalamyd or of aureomycin.

4 Continue injections of penicillin.

Continuing Care (Progressively Unfavorable Course)

1 For the amebicide substitute chloroquine using 1 tablet of 100 mg 3 times daily for two to three weeks or give para-aminobenzoic acid 2 gm every 2 hours night and day for seven days to maintain a blood level of 30 to 60 mg per 100 cc of blood.

2 Try retention enemas made by dissolving 2 gm of carbarsone in 200 cc of warm 2% sodium bicarbonate. Administer amebicidal enema after cleansing alkaline enema every second night for ten days.

3 Examine other members of the household to be sure that the patient is not being constantly re-infected by a carrier within the household or among the food handlers.

4 With failure of pharmacotherapy consider surgical drainage of feeding focus particularly in liver.

ANALEPTICS

Analeptics are drugs capable of stimulating the central nervous system. They are used particularly for the treatment of acute barbiturate poisoning (p 4253)

Classification

In their exceedingly valuable report to the Council on Pharmacy and Chemistry Eckenhoff and associates divide analeptics into four categories (JAMA 139 780 1949)

1 Those with a primary stimulant action (picrotoxin metrazol nikethamide strychnine caffeine and atropine)

2 Those whose effects are reflex from one source or another (smelling salts whiskey brandy camphor alcohol ether cyanide sulfide nicotine and alpha lobeline)

3 Sympathomimetic drugs whose stimulant action on the central nervous system is disproportionately great in relation to that on the involuntary nervous system

4 Substances which increase the excitability of tissue by entering directly into a biochemical reaction (pyruvate succinate fumarate and components of vitamin B complex)

Therapeutics

Of the analeptics only picrotoxin metrazol nikethamide (coramine) alpha lobeline amphetamine d amphetamine (dexedrine) and deoxyephedrine (methedrine) merit consideration. These preparations are compared in the chart which follows (p 4188)

Because of their relative toxicity consideration need not be given strychnine caffeine atropine cyanide sulfides and nicotine. Because of their relatively feeble action smelling salts whiskey brandy camphor alcohol sympathomimetic amines (other than those above mentioned) pyruvate succinate fumarate and components of vitamin B complex may be discarded.

ANAPHYLACTIC SHOCK

Most instances of anaphylactic hypersensitivity occur when a biological is injected by the physician with therapeutic intent. Those practitioners who have unwittingly induced or even witnessed this violent and occasionally lethal treatment reaction certainly will not wish to short-cut the admittedly cumbersome routines which follow.

Of therapeutic principles listed in the management of hypersensitivity reactions (p 4175) the practitioner is limited to desensitization or hyposensitization and palliation and prophylaxis with adrenergic and antihistamines (p 4210).

Determination of Degree of Hypersensitivity Before introduction of any biological even in test doses the patient is questioned relative to

ANALEPTICS

| Drug | Available Products | Initial Dose | Succeeding Doses | Notes |
|--|--|--------------|--|--|
| Picrotoxin U.S.P. | 20 cc vials 1 cc — 3 mg For intravenous use | 2 cc | 3 to 5 cc (9 to 15 mg) at 15-30 minute intervals | Most potent analeptic agent for treating barbiturate depression. Latent period of ten to thirty minutes makes metrazol preferable for immediate treatment of poisoning by rapidly acting barbiturates and requires that succeeding doses be delayed for at least twenty to thirty minutes to avoid accumulation leading to convulsions. |
| Metrazol (Pentylentetrazol) N.N.R. | Ampuls 1 or 3 cc 1 cc — 100 mg For subcutaneous intramuscular or intravenous injection | 1 to 3 cc | 1 to 3 cc | Valuable analeptic but inferior to picrotoxin in potency. Maximum effect immediately follows intravenous injection favoring its use over picrotoxin in respiratory depressions due to short acting barbiturates. Requires frequent introduction since duration of action is brief. May be combined with picrotoxin using metrazol for immediate effect and picrotoxin for delayed effect. Definitely inferior to picrotoxin or metrazol as an analeptic agent. |
| Nikethamide (Coramine) N.N.P. | Ampuls 1.5, 2 or 5 cc 1 cc — 250 mg For subcutaneous intramuscular or intravenous injection | 3 cc | 5 to 10 cc every five minutes if necessary | |
| Amphetamine Sulfate (Benzedrine Sulfate) N.N.P. | Tablets 5 and 10 mg Improvised solution by dissolving 10 mg in 1 cc of physiologic sodium chloride | 1 cc | 1 cc at 30 minute intervals | Action immediate but may cause sympathomimetic side effects such as elevation of blood pressure etc. Prefer metrazol for immediate action and picrotoxin for delayed effect. |
| Methamphetamine Hydrochloride (Desoxyn Hydrochloride) N.N.R. Alpha Lobeline | As Amphetamine Sulfate Ampuls 1 cc — 32 mg (infants) or 97 mg (adults) | 1 cc | Every thirty minutes if necessary | Action uncertain and usually followed by a period of depression. Not recommended in view of the availability of other better analeptic drugs. |

previous hypersensitivity reactions. Inquiry is made concerning personal and familial evidences of common allergic syndromes (hay fever, food or drug idiosyncrasy, bronchial asthma, etc.) previous injections of serum and the nature of previous responses to injected biologicals. Not until these questions have been answered is it safe to proceed with cutaneous testing, much less therapeutic injections of serum or other potential allergens.

Terminology

1 *By hypersensitivity* is meant the presence of any local or constitutional allergic hypersensitivity reaction, whether acute histamine type or chronic tuberculin type.

2 *Negative sensitivity* implies neither personal nor familial history of allergies and no previous record of injection of biologicals for diagnosis or therapy.

3 *Presumptive sensitivity* is assumed when there is a history of personal or familial allergy and/or of previous injection of a biological.

4 *Probable sensitivity* exists in the presence of any presumptive evidence with an additional history of hypersensitivity to serum testing.

5 *Positive sensitivity* implies the presence of all probable evidences plus the history of a hypersensitivity reaction to previous therapeutic serum injection.

Cutaneous Tests

After eliciting the history for rough estimation of the degree of hypersensitivity, the following procedure is suggested for skin testing:

NEGATIVE HISTORY

| Time | Procedure | Negative Response | Positive Response |
|------|---|--|--|
| 00 | Scratch test, 1:10 dilution of serum, etc. (p. 557) | Proceed as per protocol | Regard as presumptive. Proceed as below. |
| 020 | Intracutaneous test (p. 557) 1:1000 dilution. | Proceed as per protocol | Desensitize (p. 4191) |
| 040 | Intracutaneous test, 1:100 dilution. | Proceed as per protocol | Desensitize |
| 060 | Intracutaneous test, 1:10 dilution. | Inject without desensitization as per directions (p. 4190) | Desensitize |

PRESUMPTIVE HISTORY

| Time | Procedure | Negative Response | Positive Response |
|------|-------------------------|---|-----------------------|
| 00 | Scratch test 1:10 | Proceed as per protocol | Desensitize (p. 4191) |
| 015 | Intracutaneous 1:10,000 | Proceed as per protocol | Desensitize |
| 030 | Intracutaneous 1:1,000 | Proceed as per protocol | Desensitize |
| 045 | Intracutaneous 1:100 | Proceed as per protocol | Desensitize |
| 060 | Intracutaneous 1:10 | Inject without desensitization as per direction (p. 4190) | Desensitize |

PROBABLE OR POSITIVE SENSITIVITY

1. Avoid injection, if possible.
2. If patient has received previous specific antitoxin, as for example tetanus or diph-

theria substitute fluid alum precipitated toxoid in a booster dose of 0.1 cc (p 4364)

3 If antibiotic alone may be effectual withhold antiserum unless there is desperation need (p 4564)

4 If compelled to give antiserum proceed with desensitization as indicated below

Therapeutic Procedure

The routines which follow are time consuming and laborious. Nevertheless the tragedy of anaphylactic death more frequently encountered than generally reputed warrants hyperprecaution with each and every injection of a potential allergen.

SERUM INJECTIONS FOR THOSE WITH NEGATIVE OR PRESUMPTIVE HISTORIES OF HYPERSENSITIVITY AND COMPLETELY NEGATIVE CUTANEOUS TESTS

1 At least thirty minutes before planned therapeutic injection give prophylactic intramuscular or intravenous injection of 2 to 5 cc of diphenhydramine hydrochloride (benadryl). Each cc contains 10 mg of antihistamine (p 4210).

2 If for some reason injectable antihistamine is not available substitute oral dose of 100 mg of pyribenzamine benadryl or any other antihistamine (p 4212).

3 Refill the syringe with benadryl solution for active treatment of any hypersensitivity reaction which may develop despite negative history, negative tests and prophylactic use of antihistamine.

4 Prepare a second syringe with adrenergic (2 cc of epinephrine hydrochloride 1:1000) for subcutaneous or intramuscular injection with benadryl if hypersensitivity is encountered.

5 Having taken these precautions inject undiluted specific antiserum intramuscularly. If intravenous administration is indicated dilute to 200 cc with sterile distilled water or isotonic saline solution and give slowly by intravenous drip (p 3775). To the serum-saline mixture may be added 2 to 5 cc of 1% benadryl and/or 1 cc 1:1000 epinephrine.

6 If there is the slightest suspicion of a hypersensitivity reaction interrupt injection and repeat intramuscular or intravenous injection of benadryl with subcutaneous or intramuscular injection of epinephrine.

7 At the end of an hour if there has been no evidence of hypersensitivity order oral doses of 50 mg of benadryl or pyribenzamine four times daily for two weeks for prevention of serum sickness (p 4519).

SERUM INJECTIONS FOR PATIENTS REQUIRING DESENSITIZATION

It is reasonably safe for the practitioner to give serum injections in his office or in the home of the patient with a negative or a presumptive history of hypersensitivity and completely negative cutaneous tests. However it is inadvisable to introduce biologicals into those with probable or positive hypersensitivity except under hospital supervision. Under the latter circumstance this procedure is advised.

1 Inject intramuscularly or intravenously 2 to 5 cc of diphenhydramine hydrochloride (benadryl) Each cc contains 10 mg of antihistamine

2 Substitute 100 mg of pyribenzamine benadryl or other antihistamine orally if for some reason injectable product cannot be given

3 Refill benadryl syringe with another 5 cc of antihistamine to prepare for any hypersensitivity reaction that may develop during or following desensitization or therapeutic injection of serum despite all precautions

4 Prepare a second syringe with 2 cc of adrenergic (epinephrine hydrochloride [1:1000]) for subcutaneous or intramuscular injection to supplement benadryl if hypersensitivity is encountered

5 Follow the undernoted schedule for desensitization by subcutaneous injection before administration of the full therapeutic dose

SCHEDULE FOR DESENSITIZATION

| Time HM | Dilution | Volume in cc | No Reaction | Reaction |
|------------|-----------|-----------------|---|----------|
| 00 | 1:1000 | 0.1 | As per protocol - Repeat after 30 minutes | |
| 0.15 | 1:1000 | 0.2 | | |
| 0.30 | 1:1000 | 0.3 | | |
| 0.45 | 1:1000 | 0.5 | | |
| 1.0 | 1:1000 | 1.0 | | |
| 1.15 | 1:100 | 0.1 | | |
| 1.30 | 1:100 | 0.2 | | |
| 1.45 | 1:100 | 0.5 | | |
| 2.0 | 1:100 | 1.0 | | |
| 2.15 | 1:10 | 0.1 | | |
| 2.30 | 1:10 | 0.2 | | |
| 2.45 | 1:10 | 0.5 | | |
| 3.0 | 1:10 | 1.0 | | |
| 3.15 | Undiluted | 0.1 | | |
| 3.30 | | 0.2 | | |
| 3.45 | | 0.5 | | |
| 4.0 | | 1.0 | | |

If the reaction is mild to moderate treat with antihistamine plus adrenergic after an interval of 30 minutes resume desensitization repeating last asymptomatic dose. If reaction is severe or repeated consider abandonment of serum therapy.

6 After desensitization has been completed without reaction repeat injection of benadryl as in 1

7 Half hour later inject intramuscularly remainder of required unitage of antiserum at one dose

8 Remain with patient for at least one hour after serum has been introduced

9 Immediately thereafter start oral doses of antihistamine pyribenzamine benadryl etc and continue for fourteen days after last injection to prevent serum sickness

10 If it becomes necessary to repeat antiserum above procedure must be followed each time since hypersensitivity may develop or alter on short notice

ANDROGENS

Androgens are steroid compound. exhibiting properties of male sex hormones (p 2484)

Available Preparations

Innumerable androgenic substances have been naturally obtained and synthetically derived. Of these the most potent is testosterone available as the following council approved preparations

Methyl testosterone U S P Tablets (Rare Chemicals) 10 and 20 mg About one third as effective as intramuscular injection

Testosterone propionate U S P (Rare Chemicals) Ampuls of 5 10 25 and 50 mg in 1 cc of sesame oil

Metandren Linguets (Ciba) 5 and 10 mg for oral absorption Almost as effective as intramuscular injection if held for 30 to 50 minutes

General Principles of Pharmacology and Therapeutics

1 Effects of androgenic activity on any given organism are dependent on prevailing hormonal equilibrium in the given patient at the given time. Thus androgen stimulates spermatogenesis in prepuberal hypogonadism but may inhibit this function in older patients with relatively normal hormonal equilibrium.

2 Since variables in hormonal equilibrium are immeasurable and imponderable indications for androgenic therapy cannot be established by rote. Male hormone therapy is a clinical experiment requiring careful preliminary analysis and even more careful observation during and after exhibition of the steroid.

3 Most generalizations and therapeutic claims particularly those of enthusiasts are based on effects noted in castrated animals and in the rarely encountered clinical syndrome of prepuberal hypogonadism (p 2413). Under either of these circumstances it is quite correct to report such changes as increase in growth body weight strength vigor muscle mass size of genitals libido sexuality and spermatogenesis. It is misleading and inaccurate to intimate that similar effects may be anticipated in patients not afflicted with gross hormonal deficiency.

4 Failure to indicate differences in host responses to hormonal therapy has created considerable confusion. Understandably the practitioner has difficulty reconciling the glittering reports of enthusiasts with his less miraculous personal experiences.

5 In the prescription or administration of androgen to the older male first consideration must be granted potential carcinogenic activity relative particularly to the prostate. The specter of this tragic manifestation has made us unwilling to use androgen unless indications are crystal clear and other therapeutic endeavors have been meticulously tried and found wanting.

6 In the female first consideration must be accorded the cosmetic side effects of hirsuties and acne. Whereas it is generally true that arrhenomimetic activity is related to dose and rarely occurs with less

than 500 mg of testosterone propionate per menstrual cycle certain phenomena (notably hirsuties and acne vulgaris) may be intensified in those who already have a pre treatment tendency to hairiness and the dermatosis

7 Finally evaluation of therapeutic results with androgen is complicated by psychotherapeutic influences. In the minds of the laity male sex hormone symbolizes vigor libido sexuality and genitalism. Actually most effective therapeutics with androgens is accomplished in the non sexual sphere as indicated in the tables

ANDROGYNOUS EFFECTS OF ANDROGENS

Without regard to sex, androgen therapy is recommended in a variety of clinical conditions mostly endocrinopathies. The practitioner will note paradoxical indications which usually depend on the state of hormonal equilibrium at the time of institution of therapy i.e. in anterior pituitary disorders to inhibit secretion in hyperpituitarism and again to stimulate the output of growth factor in dwarfism

Acromegaly (p 1156)

To suppress hypersecretion of anterior pituitary growth factor

Adiposo-Genital Syndrome (Fröehlich syndrome p 1166)

For stimulation of anterior pituitary growth hormone. Use only with bilateral intra-abdominal cryptorchism. Otherwise give gonadotropic hormone

Adrenocortical Deficiency (Addison's Disease) (p 1276 4159)

To stimulate output of adrenal cortical hormone

Angina Pectoris (p 893) Arteriosclerosis Coronary Insufficiency and Sclerosis

On the basis of increased blood volume and increased tonus of cardiac musculature following androgen therapy in castrated animals administration of male sex hormone has been suggested in the treatment of angina pectoris. Inasmuch as the normal adult, in hormonal equilibrium, does not respond as the eunuchoid experimental animal, reported favorable results are probably psychotherapeutic

Dwarfism (p 693)

For stimulation of anterior pituitary growth hormone

Giantism Hyperpituitarism

See Acromegaly

Hypopituitarism

See Dwarfism and Adiposogenital Syndrome

Peptic Ulcer (p 1780)

Irrational indication on the paradoxical basis that peptic ulceration is infinitely more common in the male. Results are due presumably to psychotherapy or spontaneous healing

Peripheral Vascular Disease

See Angina Pectoris

Prematurity

In prepubertal hypogonadism there are retentions of nitrogen sodium chloride and water. Increase of muscle mass due to protein anabolism and an elevation of the basal metabolic rate. These effects cannot be expected in the adult with relatively normal hormonal equilibrium but may occur in premature infants

Rheumatoid Arthritis (p 2925 and 4502)

As substitute for less easily available cortisone (adrenocortical hormone)

ANDROGEN THERAPY IN THE MALE

Climacteric (p 2414)

Lurking hazard of prostatic carcinogenesis narrows use to those with severe and intractable symptoms as observed in very rare instances in our experience. If given use cocktail consisting of androgen and estrogen in the ratio

of 10 mg of the former to 0.5 mg of diethylstilbestrol Inject 75 mg testosterone weekly

Infertility Sterility

Of value only in the rare instance of sterility or infertility due to primary hypogonadism (p 2419)

Hypogonadism

Specific replacement therapy in prepuberal primary hypogonadism (Figs 577 p 2415 and p 2416) Prefer anterior pituitary gonadotropic hormone in secondary hypogonadism (Fig 578 p 2416) and particularly in cryptorchism (Fig 581 p 2423 and p 2423)

Impotence

Increase of libido only where impotence is the result of primary hypogonadism (p 2409)

Mumps (p 4416)

For prevention and treatment of orchitis

Prostatic hypertrophy (p 2445)

Potentially carcinogenic

Weight Gain

Only in those with primary hypogonadism

ANDROGEN THERAPY IN THE FEMALE

Salmon (Progress in Gynecology 1946) states that androgen effects in the female may be divided into 4 sequential phases induced by increasing dosage levels of hormone (1) Estrogen attenuation and neutralization (50 to 150 mg per cycle) (2) Ovarian inhibition (200 to 250 mg per cycle) (3) pituitary inhibition (350 to 400 mg per cycle) and (4) arrhenomimesis (500 mg plus per cycle)

Anticarcinogenesis

Particularly in metastatic malignancy of the breast (p 2581 4326)

Breast Engorgement

Prefer use of ammonium chloride

Breast

See anticarcinogenesis and lactation

Dysmenorrhea

Moderate doses up to 200 mg in divided doses per menstrual cycle may be effective in primary dysmenorrhea (p 2561)

Dysovulation

Small doses up to 100 mg in 4 equally divided amounts administered during pre ovulatory phase of cycle for two successive months may be effective in preventing mittelschmerz (midmenstrual pain)

Endometriosis

In early cases with history of severe premenstrual or intermenstrual pain but without positive findings where conservative surgical measures are employed to preserve child bearing capacity or ovarian function for advanced cases in which radical surgery is indicated but must be postponed for medical or social reasons pre operatively in advanced cases particularly with bowel involvement

Frigidity Genital Underdevelopment (Clitoris)

Small doses up to 150 mg per menstrual cycle may produce enlargement with increased libido and more satisfactory orgasm

Fibroids

Particularly associated with menorrhagia

Homosexuality Lesbianism

Of no value other than psychotherapeutic

Lactation

For suppression of anterior pituitary lactogenic factor following pregnancy Two daily intramuscular doses each of 25 mg preceding onset of lactation

Mastalgia

See Breast engorgement.

Meno-Metrorrhagia

If malignancy is excluded consider symptomatic use Inject 150 mg during first two weeks of cycle (p 2557)

Menopause

Anticarcinogenic effect relative to the breast Use in preference to estrogen.

Menstruation

May be inhibited through suppression of anterior pituitary gonadotropic factor

Mittelschmerz

See Dysovulation

Ovulation

May be suppressed through secondary effect on anterior pituitary gonadotropic hormone

Premenstrual Tension

Prefer Ammonium chloride

ANTABUS

Tetraethylthiuran disulfide marketed as antabus is a white or slightly yellow powder insoluble in water Antabus is relatively non toxic to man in single daily doses of 3 gm or of repeated daily doses of 0.25 to 1 gm provided that alcohol is not ingested

Available Preparations

Antabus (Ayerst McKenna and Harrison) Tablets 0.5 gm

Antabus has not yet been licensed for general distribution It is still (1950) in the stage of clinical investigation under the auspices of governmental authorities in the United States and Canada

Pharmacology

Human beings not exposed to alcohol reveal no untoward effects from antabus taken in single doses of 3 gm or daily doses of 0.25 to 1 gm for several months Neither subjective nor objective manifestations are observed other than fatigability an occasional instance of decreased sexual potency and somnolence Examinations of blood urine renal and hepatic functions and electrocardiograms show no abnormalities attributable to the drug during continued treatment

Elimination of antabus from the body is slow Ingestion of 1.5 gm can be traced for seven to eight days after introduction

Therapeutics

When the human subject has taken as little as 1 gm of antabus within the previous twelve hours intake of alcohol produces a facial sensation of heat within five to fifteen minutes A few moments later there is intense vasodilatation of face and neck the whole area appearing a purple red Some patients reveal vasodilatation as well on other parts of chest and arms At the same time there is a striking vasodilatation of cleras with slight edema of the loose connective tissue under the lower eyelids

Accompanying the initial vasodilatation there is a decided increase in skin temperature The pulse rate rises to 120 to 140 beats per minute blood pressure is unaltered or slightly depressed cardiac output is

increased about 50 per cent pulmonary ventilation is increased with a corresponding decrease in alveolar carbon dioxide

Sometimes nausea is noted thirty to sixty minutes after consumption of alcohol. With the onset of nausea flushing is replaced by pallor and there is a considerable fall in systolic and diastolic blood pressures. Copious vomiting may occur with or without precedent nausea.

At the time of nausea there is an intense feeling of discomfort with pulsating headache, palpitation, subjective dyspnea, a sensation of constriction in the neck as though the collar had become too tight, a feeling of a premature hangover, tenesmus, diarrhea and a garlic taste and odor to the breath.

With larger doses of alcohol in some patients there is in addition dizziness, somnolence and unconsciousness for as long as a half hour. Still larger doses, particularly in more sensitive patients, may result in toxic symptoms including dermatoses, peripheral circulatory collapse with absent pulse, convulsions, amnesia, hemiparesis and even death.

Antabus sensitization to alcohol is associated with elevation of blood acetaldehyde levels, acetonuria and an intense characteristic smell of acetone on the expired breath.

Although the use of antabus in the treatment of alcoholism is still in the experimental phase, the original Danish investigators, Hald, Jacobsen and Martensen-Larsen, have already reported on the treatment of 550 patients. As modified by Canadian investigator, Gelbman and Epstein, the following routine has been established for use only by experienced investigators with facilities for the treatment of severe untoward reactions:

- 1 Before ingestion of antabus insist on a period of at least forty eight hours and preferably of one week of sobriety.
- 2 In the presence of a relative, friend, social worker or member of Alcoholics Anonymous, explain the method of treatment to the patient, preferably with a group of others similarly afflicted. Allocate to each patient 9 tablets each of 0.5 gm. to total 4.5 gm.
- 3 Have patient swallow 4 tablets immediately under observation of physician and remaining members of the group.
- 4 If patient is ambulatory, have responsible friend or associate see that 3 tablets are taken the next morning.
- 5 Again in the presence of a friend or associated investigator, have patient swallow 2 tablets on the morning of the second day.
- 6 On the afternoon of the second day, patient with attendant, comes to the office or hospital of the chief investigator and brings along his favorite form of alcohol.
- 7 In the presence of the physician and other members of the group, the patient pours out for himself 2 to 6 ounces of hard liquor or 1 quart of beer and is asked to drink in his normal fashion.
- 8 On first appearance of symptoms of sensitization to alcohol, drinking is discontinued.
- 9 Thereafter, the patient is given an antabus maintenance dose of 0.25 to 0.75 gm. daily. The amount is adjusted so that flushing occurs after ingestion of 1 teaspoonful of alcohol.

- 10 Under guidance of friends relatives social workers or companions in Alcoholics Anonymous patient is observed daily to be sure that tablets are taken During this time necessary psychotherapy is introduced Patients observed for six months or more following treatment with antabus enjoyed social recovery in 52 per cent and marked improvement in 19 per cent Only 16 per cent were reported as unchanged and these for the most part were individuals with pronounced mental symptoms before therapy was instituted
- 11 Whereas Danish workers report no absolute contraindications to Antabus therapy in alcoholism extreme precautions would certainly appear warranted in those with cardiovascular disturbances renal or hepatic insufficiency epilepsy diabetes and other chronic diseases
- 12 For protection of ambulatory patients the Canadian investigators give cards to patients which read The bearer of this card is taking antabus The drug alone is harmless When combined with alcohol symptoms of marked flushing perspiration redness of the eyeballs difficulty in breathing odor of acetone on the breath palpitations vomiting and low blood pressure will be marked If such a reaction occurs and is severe please call the hospital and get in touch with the doctor on call at the department

ANTHELMINTICS

The more highly organized invaders of the human body are less susceptible to anti infective agents than lowlier bacteria amebas and protozoa Indications for anthelmintics are determined by the nature of the infesting organism and by the extent to which host tissues have been invaded Fortunately most helminths remain wholly intra intestinal where they are vulnerable to oral medication Those which penetrate the barrier of the intestinal mucosa (particularly flukes) and those which are deposited subcutaneously by vectors (such as filaria) require medicaments which possess post absorptive activity

Whether prescribed for pre or post absorptive effects most anthelmintics are potentially toxic to the host In his choice of drug the practitioner selects the least hazardous preparation reserving more toxic products for refractory or recurrent infestations as indicated in the following table

ANTHELMINTICS

| Preparation | Indication | Toxicity |
|---|--|-------------------------------------|
| Aspidium U S P (Male Fern) Oleoresin of Atabrine see Quinacrine Betanaphthol U S P | Trichocephalosis Uncinariasis and intestinal dis- tomiasis | Moderate (p 1695) Negligible |

ANTHELMINTICS—Continued

| Preparation | Indication | Toxicity |
|---|---|---|
| Carbon Tetrachloride N F | Superseded by less toxic tetrachlorethylene in uncinariasis and intestinal distomiasis Use only for refractory infections | Considerable (p 1897) |
| Chenopodium U S P (American Worm Seed) Oil of | Ascariasis and trichuriasis | Considerable (p 1896) |
| Diphenan | Enterobiasis | Negligible |
| Emetine hydrochloric acid U S P | Pulmonary Paragonimiasis | Considerable (p 520) |
| Gentian Violet N R (Methylbisaniline) | Enterobiasis (Pinworm) and strongyloidiasis | Negligible |
| Hexrazen | First choice in filariasis May replace hexylresorcinol as first choice in ascariasis Try also in trichinosis | Negligible |
| Hexylresorcinol U S P (Caprokol Crystoid) | Ascariasis intestinal distomiasis trichuriasis enterobiasis uncinariasis and teniasis | Negligible |
| Leche de higuero (Ficus Laurifolia) | Where available and fresh in ascariasis trichuriasis and enterobiasis Not obtainable in U S A | Moderate |
| Pelletierine Tannate U S P | Teniasis | Considerable (p 1896) |
| Phenothiazine | Enterobiasis | Moderate |
| Quinacrine | Teniasis | Negligible |
| Santonin U S P | Ascariasis | Considerable (p 1896) |
| Tetrachlorethylene N F | Uncinariasis intestinal distomiasis and trichuriasis | Minor (p 1895) Contra indicated in presence of ascariasis |
| Thymol U S P | Uncinariasis | Considerable (p 1897) |

ANTHRAX

[Malignant Pustule Woolsorter's Disease]

Principles of Treatment

1 Prior to introduction of antibiotics cutaneous anthrax (malignant pustule) carried a mortality of 20 to 25 per cent (Fig 42 p 293) With pulmonary involvement (woolsorter's disease p 2190) recovery was unusual if it occurred at all

2 Because of its properties of encapsulation and sporulation B anthracis is resistant to antibiotics unless given in high doses With adequate and sustained levels however the organism exhibits sensitivity to penicillin sulfonamide streptomycin aureomycin and chloramphenicol

3 The combination of high mortality and organism resistance demands vigorous combined treatment

4 Heterologous anti anthrax serum is no longer Council approved nor commercially available It was not antitoxic its antibacterial potency was feeble at best and it imposed the threat of hypersensitivity reactions

5 In view of the efficacy of antibiotic treatment surgical excision of the malignant pustule may be deferred. Instrumentation of the wound carries greater threat for dissemination of invading organisms than is warranted by potential benefits resulting from attempted eradication of the feeding focus.

Practical Management

Immediate Care

1 Transfer the patient to a hospital for isolation and professional nursing care.

2 Cover wound with sterilized petrolatum. Warn attendants to avoid contamination of their persons, instruments or apparatus with this highly virulent organism.

3 Inject intramuscularly 500 000 units of crystalline penicillin G in aqueous solution for immediate priming effect. Simultaneously deposit 600 000 units of procaine penicillin G in oil with 2% aluminum monostearate for maintenance of maximum therapeutic levels.

4 Administer orally a loading dose of 2 gm. each of sulfadiazine and sulfamerazine with 4 gm. of bicarbonate of soda. If the patient suffers gastric intolerance or is unable to swallow tablets, inject intravenously 2.5 gm. each of sodium sulfadiazine and sodium sulfamerazine in 200 to 500 cc. of molar lactate or physiologic saline solution (p. 4546).

5 If stomach is tolerant, supplement penicillin sulfonamide by oral administration of a priming dose of 4 gm. of aureomycin or chloramphenicol, preferably the latter which has a lesser tendency to produce gastric irritation. Substitute 2 gm. of streptomycin intramuscularly if the stomach is intolerant.

6 Initiate prophylactic antihistamine therapy. Prescribe 50 mg. of pyribenzamine or benadryl four times daily. If the patient is unable to swallow, inject 5 cc. of 1% benadryl intramuscularly.

Continuing Care (Favorable Course)

1 Maintain penicillin levels by intramuscular injections at 3, 4, 6 or 8 hour intervals of 300 000 to 600 000 units of procaine penicillin G in oil with 2% aluminum monostearate, being guided by the clinical course and the patient's apparent response to therapy.

2 Maintain sulfonamide levels by oral administration of 0.5 gm. each of sulfadiazine and sulfamerazine at 4 or 6 hour intervals depending on patient response to treatment and evidences of toxicity (p. 4541). If the stomach is still intolerant, inject intravenously 2.5 gm. each of sodium sulfadiazine and sodium sulfamerazine, preferably in 200 to 500 cc. of molar lactate or physiologic saline. Repeat every eight to twelve hours as indicated.

3 Maintain antibiotic levels by oral administration of 0.5 gm. of aureomycin or chloramphenicol every three or four hours. If gastric intolerance persists, inject intramuscularly 0.5 gm. streptomycin every six to eight hours as required.

4 Continue use of antihistamine in a total daily oral dose of 200 mg.

5 Unless toxic symptoms develop, continue triple antibiotic attack.

with penicillin sulfonamide and streptomycin for a minimum period of ten days Continue antihistamine for another two weeks

Continuing Care (Unfavorable Course)

1 Increase penicillin levels by raising each dose to 600 000 to 1 000 000 units procaine penicillin G Decrease intervals to every three or four hours Use as preparation of choice procaine penicillin G in oil with 2% aluminum monostearate

2 Step up sulfonamide levels by administration of 0.5 gm each of sulfadiazine and sulfamerazine at 3 or 4 hour intervals

3 Double oral doses of aureomycin or chloramphenicol or increase intramuscular injections of streptomycin to 0.5 gm every four hours

4 With pulmonary involvement give aerosolization with 100 000 units of penicillin G and 0.5 gm of streptomycin per cc of physiologic saline

Continuing Care (Progressively Unfavorable Course)

1 Set up an intravenous drip Give alternately 1 million units of crystal line penicillin G in 30 cc of saline solution 2.5 gm each of sodium sulfadiazine and sodium sulfamerazine in 200 cc of molar lactate solution 500 mg of aureomycin hydrochloride in 200 cc of physiologic saline solution 50 mg of benadryl in 5 cc of 1% solution and 500 cc of whole citrated blood or 2 units of plasma

2 Repeat cycle of antibiotic antihistamine and supportive therapy with blood or plasma Omit sulfonamide if toxic symptoms arise persist with penicillin and streptomycin until the patient recovers or succumbs

3 All else failing resort to arsenotherapy injecting intravenously by syringe or in drip 60 mg arsenoxide (mapharsen)

ANTIBIOTICS

Innumerable antibiotic substances exist in nature Illustrative of the rapid strides in antibiotic therapy is the fact that of the twenty three preparations listed in 1946 (Table 13 p 103) only four appear in the roster which follows immediately Already obsolete are actinomycin actinomycin A actinomycin B allicin canavalin chlorellin citrinin clavacin patulin claviformin clavatin flavicin flavacinin fumigacin helvolic acid fumigatin gigantic acid ghatoxin gramicidin lysozyme penicillic acid pyocyanase and pyocyanine

Antibiotics in common usage are discussed under separate entries

ANTICOAGULANT DRUGS

The pharmacology therapeutics and toxic manifestations produced by the anticoagulant drugs heparin and Dicumarol have been previously discussed (pp 1050-1052) We still adhere to the opinion that

ANTIBIOTICS OF BIOLOGIC ORIGIN

| Preparation | Origin | Bacterial Spectrum |
|------------------------------------|----------------------------------|---|
| Aerosporin | <i>E. polymyxa</i> | Gram negative bacilli Not commercially available |
| Aureomycin | <i>Streptomyces aureofaciens</i> | Includes cocci bacilli rickettsias treponemes and viruses Commercially available Council accepted |
| Bactiomyacin | <i>B. subtilis</i> | Fungi. Not commercially available |
| Bactitracin | <i>B. subtilis</i> | Topical use against cocci bacilli treponemes and amebae Commercially available for local use |
| Chloramphenicol (Chloromycetin) | <i>Streptomyces venezuelae</i> | Parallels aureomycin Commercially available Council accepted |
| Circulin | <i>B. circulans</i> | Cocci bacilli and fungi. Not commercially available |
| Dihydrostreptomycin | From streptomycin | As streptomycin but less toxic Commercially available Council accepted |
| Garlicin | Garlic | Especially gram negative bacilli Not commercially available |
| LL 47 | <i>Aspergillus</i> | Experimental use against virus influenza |
| Lamocidin | <i>Pro-actinomyces</i> | Experimental (M tuberculosis V comma) |
| Lupulin | Hops | Experimental (M tuberculosis) |
| Neomycin | <i>Streptomyces</i> | As streptomycin but less toxic and fewer resistant bacterial forms Not commercially available |
| Pectin | Apple | Influenza virus |
| Penicillin | <i>Penicillium notatum</i> | Includes gram negative and positive cocci gram positive bacilli and treponemes Commercially available and Council accepted. |
| Polymyxin | <i>B. polymyxa</i> | Especially gram negative bacilli Not commercially available |
| Streptomycin | <i>Streptomyces griseus</i> | Cocci and bacilli especially gram negative and M tuberculosis Commercially available Council accepted |
| Subtenolin | <i>B. subtilis</i> | Active against M tuberculosis Not commercially available |
| Terramycin | <i>Streptomyces rimosus</i> | As aureomycin Commercially available |
| Tyrothricin | <i>B. dubos</i> | Topical use against bacilli mostly gram positive Commercially available Council accepted |

heparin is best adapted for use by the general practitioner whereas Dicumarol the specialist preparation of choice is too treacherous for use outside of fully equipped establishments

Dicumarol versus Heparin

Dicumarol produces hypo prothrombinemia (p 1109) Effective doses productive of prothrombin levels between 20 and 30% of normal pre

vent intravascular clotting without causing hemorrhagic manifestations. Dicumarol is effective when given orally. Drug costs with Dicumarol anticoagulant therapy are minimum.

However, the lesser cost of Dicumarol is nullified by the increased cost of necessary laboratory procedures. Its ease of administration is canceled by the uncertainty of its effect, the unreliability of prothrombin determinations even in the hands of experts, and the serious hazards of toxicity, notably bleeding.

Heparin is an effective anticoagulant through its triple threat activity as antithromboplastin, antiprothrombin, and antithrombin. So far as is known, it does not function through damage to liver cells.

The anticoagulant effect is apparent in a very few minutes. Given by subfascial deposit, the anticoagulant effect of adequate doses persists for twenty-four to seventy-two hours. Hyperheparinemia is instantly controlled by intravenous injection of protamine, which is antidotal in the proportion of mg for mg. Thus, intravenous introduction of 10 cc of 2% protamine offsets the anticoagulant effect of 200 mg of heparin.

In contrast to Dicumarol bleedings, significant hemorrhage associated with hyperheparinemia must be exceedingly rare. Loewe, the originator of the depot method, in an extensive experience has never had occasion to use protamine for its antidotal effects.

Heparin activity may be gauged with reasonable accuracy by estimation of the coagulation time (Lee-White-Howell), measurable at the bedside (p. 4572). The practitioner may decide immediately on determination of the results whether or not to give a deposit and approximately what dose is required.

The overall cost of heparin, admittedly great, is less than the overall cost of Dicumarol, to which must be added laboratory fees for prothrombin estimations.

Available Preparations

Dicumarol N N R Tablets 25, 50, and 100 mg (Abbott Merrell Schieffelin). For initial loading dose, give 200 to 300 mg orally; for average maintenance dose, 100 to 200 mg daily, depending on estimates of prothrombin time.

Tromexan (4,4-dihydroxydicumaryl ethyl acetate), a commercial preparation not yet widely distributed. For parenteral Dicumarol therapy, requires injections at approximately 12-hour intervals as indicated by prothrombin tests.

Heparin Solution N N R (10 cc vials made so that 1 cc = 10 mg) (Abbott Upjohn). For continuous intravenous drip injection, add 15 cc to 1000 cc of saline diluent. For intermittent intravenous injection, introduce by syringe method. The unofficial Liqueamin (Roche) is identical in composition and strength with the official preparation.

Depo Heparin Sodium (Upjohn). 1 cc cartridges with disposable syringe. Contain 200 mg of heparin in gelatin and dextrose, with and without vasoconstrictors (epinephrine 1 mg and ephedrine 10 mg).

Heparin Pitkin (Warner) ampuls 2 cc = 200 mg, 3 cc = 300 mg. In gelatin and dextrose, with and without vasoconstrictors.

Practical Therapeutics

Dicumarol

1 If Dicumarol is used for anticoagulant action follow directions issued by the American Heart Association which require that prothrombin determinations be made daily and which forbid an order of Dicumarol until the morning prothrombin report is available

2 Order 200 to 300 mg of Dicumarol daily until prothrombin time by the Link Shapiro method is reported at thirty seconds

3 Give fifty to 100 mg of Dicumarol daily if prothrombin time is between thirty and thirty five seconds

4 When prothrombin time again reaches thirty seconds or less give drug cautiously in 100 mg doses

5 Continue Dicumarol for a minimum period of thirty days following the last thrombotic or thromboembolic episode

6 In the presence of hemorrhage due to drug inject sixty to seventy five mg of synthetic vitamin K (menadione) intravenously and obtain fresh whole blood or plasma for intravenous introduction

Heparin

1 Before depositing heparin subcutaneously obtain coagulation time (p 4572) estimate blood pressure gradient and note the patient's approximate weight

2 If the patient weighs in excess of 150 lbs administer 300 to 400 mg of anticoagulant Give the larger dose to obese thrombophiles use smaller dose for lighter patients with more nearly normal coagulation times

3 Unless there is some contra indication (such as hypertension) prefer heparin with vasoconstrictor This preparation is particularly suitable in acute coronary occlusion associated with shock and in pulmonary embolizations complicated by forward failure

4 If addition of vasoconstrictor to anticoagulant causes increase in local reaction or sympathomimetic manifestations (tachycardia elevation of blood pressure sweating pallor anxiety precordial distress etc) substitute the product without vasoconstrictor The latter producing elevation of coagulation time over therapeutic levels for only twenty four hours requires more frequent introduction Addition of vasoconstrictor probably doubles the effective period of the anticoagulant

5 To patients weighing less than 150 lbs give 200 to 300 mg for the initial deposit Use larger amount for thrombophiles and lesser amount for lighter patients with more nearly normal coagulation times

6 Caution the patient that a local reaction may be experienced within four to six hours and that discomfort may last for two to twenty four hours Leave an order for subcutaneous injection of 100 mg of demerol or of 5 mg of dolophine repeated at hourly intervals at least thrice if necessary Advise the patient to request relief as soon as discomfort is noted

7 Forbid local applications of ice or heat to the inflamed area. The former delays and the latter accelerates liberation of anticoagulant from the deposit.

8 For convenience favor depo heparin (Upjohn). The product is packaged in a disposable syringe greatly facilitating introduction by the practitioner. It is marketed in doses of 200 mg with and without vasoconstrictor and local reactions appear to be less severe and less frequently encountered than with other preparations. If there is hesitancy about use of vasoconstrictor one deposit can be made with pure anticoagulant and the other with the combination of anticoagulant and adrenergic.

9 Once daily during anticoagulant therapy with heparin obtain coagulation time by the bedside method. Try to keep the coagulation time between twenty five and forty seconds. Readings in excess of forty seconds suggest an approach to hyperheparinization which requires no therapy so long as the patient has no hemorrhagic manifestations. Readings below twenty seconds indicate insufficient dosage particularly if drawn blood fails to layer leaving a clear supernatant fluid.

10 If coagulation time is in excess of forty five seconds omit heparin therapy for that day.

11 If coagulation time is between twenty and forty five seconds omit heparin therapy for that day.

12 If coagulation time is below twenty seconds but the phenomenon of layering is observed inject 200 mg preferably with vasoconstrictor.

13 If coagulation time is less than twenty seconds and blood clots deposit 300 mg.

14 Continue heparin deposits for at least three weeks after last thrombotic or embolic episode.

15 In the presence of a prolonged coagulation time and hemorrhagic manifestations that are obviously due to hyperheparinemia prepare to inject intravenously 2 cc of protamine. Figure that protamine neutralizes heparin mg for mg. Give 5 cc of 2 per cent solution for each 100 mg of estimated overdosage. Repeat at 2 hour intervals or sooner if necessary.

ANTIGENS

Numerous antigens have been prepared from the bodies or toxic products of invading microbes. In clinical medicine these are used for induction of artificial active immunity (p 75). Antigens have extraordinary value in preventive medicine. Their universal use could eliminate cholera, diphtheria, whooping cough, plague, smallpox, tetanus, typhoid fever, tularemia, typhus fever and yellow fever.

Induction of artificial active immunity is encouraged early in life. Most pediatricists favor an immunization schedule (p 4363) beginning at six months to protect against diphtheria, tetanus, whooping cough and smallpox. Later typhoid immunizations are added. Inoculations

against plague cholera typhus and yellow fevers are instituted when there is need

Attention is drawn in this place to perversions of artificial active immunity that result in hypersensitivity phenomena (p 4163) Although histamine type and tuberculin type hypersensitivities are rarely caused by microbic antigens an occasional encephalopathy following small pox or rabies vaccination serves as a reminder that even these great boons to preventive medicine have their price

Antigens used for therapy in medical practice may be rated as follows

Proven Prophylactic Value Cholera diphtheria pertussis plague rabies Rocky Mountain spotted fever smallpox tetanus typhoid typhus yellow fever

Investigational Consideration Actinomycin BCG blastomycin coccidioidin epidemic encephalitis equine encephalitis histoplasmin influenza AB virus measles poliomyelitis and St Louis encephalitis

Useless Acne arthritis catarrhalis cold entoral Friedlander furunculosis gonococcus orovax B influenza respiratory rheumatic fever rheumatoid arthritis staphylococcal streptococcal and ulcerative colitis

Obsolete Brucellosis Ducrey bacillary dysentery erysipelas meningococcus paratyphoid pneumococcus scarlet fever toxin and tularemia

ANTIGENS USED IN DIAGNOSIS AND THERAPY

Acne Vaccine

(Cutter Kirk Lilly Parke Davis Pitman Moore Sharp & Dohme Sherman)

Prepared from corynebacterium acnes staphylococci and E coli Not recommended

Actinomycosis Vaccine

For desensitization (p 4141) Not commercially available Obtain from National Institute of Health, Bethesda Maryland

Arthritis Vaccines

(Cutter Lederle Lilly National Parke Davis Pitman Moore Sherman)

Usually contain staphylococci streptococci pneumococci H influenzae M catarrhalis KI pneumoniae (Friedlander) etc Not recommended

BCG (Bacillus Calmette Guérin)

An attenuated strain of M tuberculosis presently used experimentally for purposes of immunization (p 4602) Not yet commercially available

Blastomycin

For vaccine treatment of blastomycosis (p 4255) Not commercially available but may be obtained from Dr Donald F Martin Duke University School of Medicine Durham N C

Brucella Vaccine N N H

(Lederle National Pitman Moore)

Prepared from Br melitensis suis and abortus Of dubious prophylactic value Replaced for therapy by aureomycin (p 4271)

Catarrhalis Vaccine

(Abbott Kirk Lederle Lilly National Parke Davis Pitman Moore Sharp & Dohme Sherman, Squibb)

Mixtures of M catarrhalis KI pneumoniae pneumococci streptococci staphylococci etc Not recommended

Cholera Vaccine U S P

(Lilly)

Valuable prophylactic agent (p 4284)

Coccidioidin

Unofficial preparation not commercially available Obtain from Dr John Kessel

7 Forbid local applications of ice or heat to the inflamed area. The former delays and the latter accelerates liberation of anticoagulant from the deposit.

8 For convenience favor depo heparin (Upjohn). The product is packaged in a disposable syringe greatly facilitating introduction by the practitioner. It is marketed in doses of 200 mg with and without vasoconstrictor and local reactions appear to be less severe and less frequently encountered than with other preparations. If there is hesitancy about use of vasoconstrictor one deposit can be made with pure anticoagulant and the other with the combination of anticoagulant and adrenergic.

9 Once daily during anticoagulant therapy with heparin obtain coagulation time by the bedside method. Try to keep the coagulation time between twenty five and forty seconds. Readings in excess of forty seconds suggest an approach to hyperheparinization which requires no therapy so long as the patient has no hemorrhagic manifestations. Readings below twenty seconds indicate insufficient dosage particularly if drawn blood fails to layer leaving a clear supernatant fluid.

10 If coagulation time is in excess of forty five seconds omit heparin therapy for that day.

11 If coagulation time is between twenty and forty five seconds omit heparin therapy for that day.

12 If coagulation time is below twenty seconds but the phenomenon of layering is observed inject 200 mg preferably with vasoconstrictor.

13 If coagulation time is less than twenty seconds and blood clots deposit 300 mg.

14 Continue heparin deposits for at least three weeks after last thrombotic or embolic episode.

15 In the presence of a prolonged coagulation time and hemorrhagic manifestations that are obviously due to hyperheparinemia prepare to inject intravenously 2 cc of protamine. Figure that protamine neutralizes heparin mg for mg. Give 5 cc of 2 per cent solution for each 100 mg of estimated overdosage. Repeat at 2 hour intervals or sooner if necessary.

ANTIGENS

Numerous antigens have been prepared from the bodies or toxic products of invading microbes. In clinical medicine these are used for induction of artificial active immunity (p 75). Antigens have extraordinary value in preventive medicine. Their universal use could eliminate cholera, diphtheria, whooping cough, plague, smallpox, tetanus, typhoid fever, tularemia, typhus fever and yellow fever.

Induction of artificial active immunity is encouraged early in life. Most pediatricists favor an immunization schedule (p 4363) beginning at six months to protect against diphtheria, tetanus, whooping cough and smallpox. Later typhoid immunizations are added. Inoculations

ANTIGENS USED IN DIAGNOSIS AND THERAPY—Continued

Frei Antigen

(Lederle)

For test use in lymphogranuloma venereum (Fig 72 D p 470)

Friedlander Vaccine

(Sherman)

Contains *Ki pneumoniae* pneumococci streptococci *M. catarrhalis* and staphylococci Not recommended.

Furunculosis Vaccine

(Kirk Lilly National Drug Parke Davis Pitman Moore Sherman)

Suspension of killed staphylococci Not recommended. Prefer prophylactic use of antibiotics (p 4362)

Gonococcus Vaccine

(Kirk Lilly Parke Davis Pitman Moore Sherman)

Prefer antibiotic prophylaxis with sulfonamide or preferably penicillin.

Histoplasmin

For skin test in histoplasmosis Not commercially available

Influenza Vaccine (Bacterial)

(Kirk Lilly Parke Davis Pitman Moore Sharp & Dohme Sherman Upjohn)

Suspension of killed H influenzae combined with pneumococci streptococci and other respiratory organisms Not recommended. Do not confuse with influenza virus vaccine Types A and B

Influenza Virus Vaccine Types A and B N.N.R.

(Lilly Pitman Moore Sharp & Dohme Squibb)

Formaldehyde killed suspension of influenza virus consisting of 50% type A virus and 50% type B virus grown in extra-embryonic fluids of developing chick. For use in active immunity against viral influenza infections especially when epidemic threatens (p 4372) Employ cautiously in allergic patients. Proceed by skin test for sensitivity

Lygranum ST

(Squibb)

Lymphogranuloma venereum antigen of chick embryo origin for Frei test (Fig 72 D p 470) Do not confuse with Lygranum CF used in complement fixation test.

Measles Vaccine

Experimental use only (p 4400)

Meningococcus Vaccine

(Sherman)

Prefer antibiotic prophylaxis with sulfonamide or penicillin (p 4362)

Oravax

(Merrell)

For oral use Not recommended

Paratyphoid Vaccine

Not recommended Use typhoid vaccine alone

Pertussis Vaccine N.N.R.

(Cutter Kirk, Lederle Lilly National Drug Parke Davis Pitman Moore Sharp & Dohme Sherman Squibb Upjohn Wyeth)

Use pertussis vaccine for booster doses (p 4463) For routine use prefer triple immunization with diphtheria toxoid, alum precipitated, tetanus toxoid alum precipitated, and pertussis vaccine

Pertussis Vaccine Alum Precipitated N.N.R.

(National Drug Parke Davis Upjohn)

May be preferable to plain suspensions above

Pertussis Vaccine Combined with Diphtheria Toxoid

See diphtheria toxoid above

Pertussis Vaccine Combined with Diphtheria and Tetanus Toxoids

See diphtheria toxoid above

Plague Vaccine U.S.P.

(Cutter)

Highly efficacious for prophylaxis (p 4467)

ANTIGENS USED IN DIAGNOSIS AND THERAPY—Continued

Los Angeles General Hospital Los Angeles (33) California Use for skin testing and treatment of coccidioidomycosis (p 4289)

Cold Vaccine

Oral catarrhalis and respiratory vaccines Not recommended

Coli Vaccine

(Lilly Pitman Moore)

To combat urinary infections Not recommended

Diphtheria Toxin Diagnostic USP

(Cutter Lederle Lilly National Drug Parke Davis Pitman Moore Sharp & Dohme Squibb Wyeth)

For Schick test (Fig 43 ■ 302) Not used therapeutically

Diphtheria Toxin Antitoxin Mixture N.R.

Obsolete Prefer Toxoid alum precipitated

Diphtheria Toxoid USP

(Cutter Lederle Lilly National Drug Parke Davis Sharp & Dohme Squibb Wyeth)

Prefer diphtheria toxoid alum precipitated USP

Diphtheria Toxoid Alum Precipitated USP

(Lederle Lilly National Drug Parke Davis Pitman Moore Sharp & Dohme Squibb Wyeth)

Use for booster dose primarily For routine immunization, schedule prefer diphtheria toxoid, alum precipitated, tetanus toxoid, alum precipitated, pertussis vaccine combined (p 4365)

Diphtheria Toxoid Tetanus Toxoid Alum Precipitated USP

(Lederle Lilly National Drug Parke Davis Pitman Moore Sharp & Dohme Squibb Wyeth)

Prefer combination with pertussis vaccine for routine use

Diphtheria Toxoid Alum Precipitated Tetanus Toxoid Alum Precipitated and Pertussis Vaccine Combined N.R.

(National Drug Sharp & Dohme Squibb)

For simultaneous immunization against whooping cough diphtheria and tetanus Recommended for routine use especially in infancy See immunization schedule (p 4365)

Diphtheria Toxoid Combined with Pertussis Vaccine USP

(National Drug Parke Davis Sharp & Dohme Upjohn)

Prefer combination with tetanus toxoid

Ducray Vaccine

(Lederle)

For use in Ritscher's skin test for chancroid (Fig 41 p 289)

Dysentery Vaccine

(Parke Davis)

Polyvalent suspension of shigellae For prophylaxis prefer antibiotic effects of sulfonamide and aureomycin (p 4362)

Encephalitis Vaccine (Herpes F Strain)

(Lederle)

A 10% rabbit brain suspension of virulent neurotropic herpes virus inactivated by formaldehyde For use in acute and chronic stages of epidemic and other forms of encephalitis Unofficial but worthy of trial for lack of more effective specific therapy

Entoral

(Lilly)

Contains pneumococci streptococci M catarrhalis and influenzae Not recommended

Equine Encephalomyelitis Vaccine

(Lederle)

Formalinized chick embryo culture of eastern and western strains of virus For human use to stimulate production of protective antibodies Give 1 cc subcutaneously Repeat after one week (p 4309)

Erysipelas Vaccine

(Sherman)

Prefer antibiotic prophylaxis with sulfonamide or penicillin (p 4447)

ANTIGENS USED IN DIAGNOSIS AND THERAPY—Continued

Staphylococcus Immunogen

(Parke Davis)

Not recommended. Prefer antibiotic prophylaxis and treatment with sulfonamide and/or penicillin.

Staphylococcus-Streptococcus Vaccine Combined N.R.

Not recommended. Prefer antibiotic prophylaxis and treatment with sulfonamide and/or penicillin.

St. Louis Encephalitis Vaccine

1 of commercially available. For experimental use only in an epidemic (p. 4310). Consult U.S. Public Health Service.

Tetanus Toxoid U.S.P.

(Lederle)

Prefer tetanus toxoid, alum precipitated.

Tetanus Toxoid Alum Precipitated U.S.P.

(Lederle Lilly National Drug Parke Davis Pitman Moore Sharp & Dohme Squibb Wyeth)

Use tetanus toxoid for booster dose annually or when indicated. For routine use prefer diphtheria toxoid, alum precipitated, tetanus toxoid, alum precipitated, pertussis vaccine combined.

Trichinella Extract

(Lederle Lilly)

For diagnostic aid only in intradermal skin test for trichinosis (Fig. 91 p. 541).

Trichophyton

(Lilly)

For diagnostic use only in determining sensitization to trichophytes (p. 433).

Tuberculin Old (O.T.)

(Lederle Lilly Parke Davis)

For von Pirquet cutaneous test (Fig. 34 p. 253). Use contents of capillary tubes. For Mantoux test, start with vial in which 1 cc contains 0.001 cc of Old Tuberculin.

Tuberculin Patch Test

(Lederle)

For testing of skin sensitivity by the method of Volmer (Fig. 35 p. 254).

Tuberculin Purified Protein Derivative (P.P.D.)

(Parke Davis, Sharp & Dohme)

For injection into the skin of subjects to test for tuberculin sensitivity.

Tularemia Vaccine

Obsolescent through efficacy of streptomycin.

Typhoid Vaccine U.S.P.

(Cutte Lilly National Drug Parke Davis Pitman Moore Standard)

For routine immunization against typhoid fever. Mandatory under all conditions. Give booster doses every 3 to 5 years or when needed. Prefer straight typhoid vaccine to mixture with paratyphoid organisms. Latter produces local and systemic reactions but very little significant or lasting immunity.

Typhus Vaccine

(Parke Davis)

Of doubtful value for the production of active immunity in the prevention of epidemic typhus. Give 1 cc injections subcutaneously at 7 to 10-day intervals, for three doses.

Ulcerative Colitis Streptococcus Vaccine

(Kirk, Parke Davis, Sherman)

Unofficial preparation. 1 of recommended.

Undulant Fever Vaccine

See Brucella Vaccine

Whooping Cough Vaccine

See Pertussis Vaccine

Yellow Fever Vaccine

Virus vaccine 1 of commercially available but exceedingly effective. Obtain from U.S. Public Health Service. Now irradiated to prevent virus hepatitis.

ANTIGENS USED IN DIAGNOSIS AND THERAPY—Continued

Pneumococcus Anhang

(Lilly)

Suspension of partially autolyzed pneumococci Unofficial and not recommended Prefer antibiotic prophylaxis with sulfonamide or penicillin

Pneumococcus Polysaccharides (Type Specific)

(Squibb)

Antigenic solutions of purified capsular polysaccharides of commoner types of pneumococci Unofficial and not recommended. Prefer antibiotic prophylaxis with sulfonamide or penicillin (p 4362)

Pneumonia Vaccine Combined

(Parke Davis)

Contains pneumococci Kl pneumoniae streptococci etc Unofficial and not recommended Prefer antibiotic prophylaxis with sulfonamide or penicillin

Poliomylitis Vaccine

Experimental

Rabies Vaccine U S P

(Harris Lilly Cutter Lederle National Drug Sharp & Dohme Squibb Standard Wyeth Pitman Moore)

Recommended only where there is definitive need (p 4487) May cause encephalitis due to tuberculin type hypersensitivity reaction (p 4307) Consider carefully

Respiratory Vaccines

(Lilly National Drug etc)

Not recommended

Rheumatic Arthritis Vaccine

(Lederle)

Unofficial preparation Not recommended

Rheumatic Fever Vaccine

(Parke Davis)

Unofficial preparation Not recommended

Rocky Mountain Spotted Fever Vaccine

(Lederle)

Prepared by inoculating chick embryos with R rickettsii For prophylaxis use three injections subcutaneously of 1 cc at weekly intervals Give 1 cc booster annually to exposed

Scarlet Fever Streptococcus Toxin U S P

(National Parke Davis Sharp & Dohme Squibb Standard)

For diagnostic Dick test Not used for therapeutics

Scarlet Fever Streptococcus Toxin Tannic Acid Precipitated N N R

(Wyeth)

For active immunization in scarlet fever Not recommended Prefer antibiotic prophylaxis with penicillin

Scarlet Fever Streptococcus Antitoxin for Schultz Charlton Test

(National Drug)

For diagnosis only to produce blanching of specific eruption (Fig 18 p 164)

Smallpox Vaccine U S P

(Cutter Lederle Lilly National Drug Parke Davis Sharp & Dohme Squibb Wyeth)

For vaccination against smallpox Routine use advised after the age of six months Repeat every three to five years

Staphylococcus Vaccine

(Kirk, Lilly Parke Davis Pitman Moore Sherman Wyeth)

Not recommended Prefer antibiotic prophylaxis with sulfonamide or penicillin

Staphylococcus Toxoid N N R

(Lederle National Drug Parke Davis Pitman Moore Sharp & Dohme)

Not recommended Prefer antibiotic prophylaxis and treatment with sulfonamide or penicillin.

Staphylococcus Bacteraophage

(Parke Davis)

Not recommended Prefer antibiotic prophylaxis and treatment with sulfonamide and/or penicillin

ANTIGENS USED IN DIAGNOSIS AND THERAPY—Continued

Staphylococcus Immunogen

(Parke Davis)

Not recommended. Prefer antibiotic prophylaxis and treatment with sulfonamide and/or penicillin.

Staphylococcus Streptococcus Vaccine Combined H N R

Not recommended. Prefer antibiotic prophylaxis and treatment with sulfonamide and/or penicillin.

St Louis Encephalitis VaccineNot commercially available For experimental use only in an epidemic (p 4310)
Consult U.S. Public Health Service**Tetanus Toxoid U S P**

(Lederle)

Prefer tetanus toxoid, alum precipitated.

Tetanus Toxoid Alum Precipitated U S P

(Lederle Lilly National Drug Parke Davis Pitman Moore Sharp & Dohme Squibb Wyeth)

Use tetanus toxoid for booster dose annually or when indicated For routine use prefer diphtheria toxoid, alum precipitated tetanus toxoid, alum precipitated, pertussis vaccine combined

Trichinella Extract

(Lederle Lilly)

For diagnostic aid only in intradermal skin test for trichinosis (Fig 91 p 541)

Trichophyton

(Lilly)

For diagnostic use only in determining sensitization to trichophytoses (p 4334)

Tuberculin Old (O T)

(Lederle Lilly Parke Davis)

For von Pirquet cutaneous test (Fig 34 p 263) Use contents of capillary tubes
For Mantoux test start with vial in which 1 cc contains 0.001 cc of Old Tuberculin.**Tuberculin Patch Test**

(Lederle)

For testing of skin sensitivity by the method of Vollmer (Fig 35 p 264)

Tuberculin Purified Protein Derivative (P P D)

(Parke Davis Sharp & Dohme)

For injection into the skin of subjects to test for tuberculin sensitivity

P Tularensis Vaccine

Obsolescent through efficacy of aureomycin

Typhoid Vaccine U S P

(Cutter Lilly National Drug Park Davis Pitman Moore Standard)

For routine immunization against typhoid fever Mandatory under all conditions
Give booster doses every 3 to 5 years or when needed Prefer straight typhoid vaccine to mixture with paratyphoid organisms Latter produces local and systemic reactions but very little significant or lasting immunity**Typhus Vaccine**

(Parke Davis)

Of doubtful value for the production of active immunity in the prevention of epidemic typhus Give 1 cc injections subcutaneously at 7 to 10 day intervals for three doses

Ulcerative Colitis Streptococcus Vaccine

(Kirk Parke Davis Sherman)

Unofficial preparation Not recommended

Undulant Fever Vaccine

See Brucella Vaccine

Whooping Cough Vaccine

See Pertussis Vaccine

Yellow Fever Vaccine

Virus vaccine Not commercially available but exceedingly effective Obtain from U.S. Public Health Service Now irradiated to prevent virus hepatitis

ANTIHISTAMINES

The present roster of therapeutic products for use in the treatment of acute histamine type allergic hypersensitivities (p 4166) lists past failures and evaluates the current status of histamines histaminases and histamine antagonists

Past Failures

The risks and difficulties of specific desensitization in Allergy encouraged early experimenters to seek non specific methods Up to 1932 at least 165 trials were made with barium sulfate barium chloride atropine ether chloral hydrate nonspecific serums and proteins de sensitization with heterologous antigen benzene heparin later current infection with *M tuberculosis* and reduction in barometric pressure

Between 1932 and 1936 many additional measures aimed at non specific inhibition of anaphylactic shock and allergic manifestations were proposed These included prescriptions of barbital pernoston tribromoethanol potassium salts sodium thiosulfate ascorbic acid (vitamin C) heparidin (vitamin P) and ethylene disulfonate (allergosil) Each of the 6 products was found useless or of doubtful value Despite enthusiastic claims Allergosil particularly was reported ineffectual by the Committee on Medicaments and Pharmaceuticals of the American Academy of Allergy (Dec 9 1945)

Histamine

Desensitization therapy with histamine was given impetus by Horton who described the syndrome of erythromelalgia of the head characterized by periodic attacks of migraine associated with ipsilateral rhinorrhea lacrimation and engorgement of temporal vessels These manifestations reproduced by injections of 0.3 to 0.5 mg of histamine and relieved by desensitization with subcutaneous injections of increasing doses of histamine were interpreted as consequences of histamine release

Method of Treatment For desensitization therapy of erythromelalgia of the head commercially available solutions of histamine diphosphate are employed The weaker solution which contains 0.275 mg of histamine diphosphate is the equivalent of 0.1 mg of histamine base the stronger solution contains 2.75 mg of the diphosphate and 1 mg of the base per cc

Unusually sensitive patients are started with 1:10 solution of the weaker preparation in order to avoid histamine shock with flushing tachycardia vertigo fall of blood pressure nausea and abdominal cramps Histamine shock may be alleviated by subcutaneous injection of 0.5 to 1 cc of epinephrine hydrochloride (1:1000) which should be held available in case of need

At first it is recommended that daily injections of sensitizing solution be given Later intervals may be increased to two days or a week Starting with 1:10 dilution of the weaker solution (containing 0.1 mg of histamine base per cc) an initial injection of 0.1 cc is made subcutaneously depending then on patient response the dose of 1:10 solution is increased until undiluted weaker solution is tolerated in the minimum dose of 0.1 cc When the full 1 cc dose of weaker solution can be injected without significant toxicity the patient is promoted to stronger solution containing 2.75 mg of histamine diphosphate or 1 mg

of histamine base per cc. The maximum dose consists of the contents of a full ampul (1 cc.) This full therapeutic dose may be given at weekly intervals for a considerable period depending entirely on the patient response.

Though many authors confirm the views and findings of Horton, our experiences coincide with those of Feinberg (JAMA 132:702, 1946) who states that injections of histamine in man do not increase tolerance.

The effectiveness of histamine in allergic conditions has been exaggerated. Whatever beneficial results are obtained must be explained on a basis other than desensitization to histamine.

Histamine-Azoprotein (Hapamine)

Efforts to desensitize patients with a preparation of histamine azoprotein (hapamine) appear to be as unsatisfactory as those employing unbound histamine. The Committee on Pharmaceuticals and Medicaments of the American Academy of Allergy (1945) reported that those who have given histamine azoprotein a fair trial found it either totally ineffective or have been able to attribute whatever measures of effectiveness it has to its non-specific action.

Histaminase (Torantil)

With the discovery that some tissues contain a substance or enzyme capable of destroying histamine, a commercial preparation of histaminase (torantil) was developed. Once again impartial investigators concluded that the results of histaminase therapy were unimpressive and that histaminase lacks a specific effect in allergic conditions.

Histamine Antagonists (Antihistamines)

In contrast to disappointments encountered with bound and unbound histamine and histaminases, newly developed antihistamines or histamine antagonists have proven remarkably effective in palliating clinical manifestations resulting from histamine type hypersensitivities (p. 4166).

Of the many preparations commercially available, the Council on Pharmacy of the American Medical Association granted first recognition to diphenhydramine hydrochloride (benadryl) and tripropellamine hydrochloride (pyribenzamine) and later to neohetramine and thenylene. Other preparations, as yet not officially accepted (1950), have actions similar to benadryl and pyribenzamine. They afford the practitioner broad latitude when Council accepted products fail in their action or when patients exhibit idiosyncrasy or untoward response to official preparation. (see Table p. 4212)

Pharmacology

Antihistamines do not influence the fundamentally deranged mechanisms productive of hypersensitivity (p. 4163). They merely neutralize the effect of the offending chemical. In this respect their palliative action is comparable to that of opiate in the relief of pain.

COMMERCIALLY AVAILABLE HISTAMINES HISTAMINASES AND ANTIHISTAMINES (HISTAMINE ANTAGONISTS)

| Trade Name and Manufacturer | Chemical Name | Available Preparations and Doses | Notes |
|---|---|---|--|
| ALLERGOSIL | Ethylene Disulfonate | | Ineffective preparation. |
| ANTHALLAN (Medico) | 3-di(n butyl)amino- methyl-4 5 6-trihy droxybenzo-1 2) furan 1 (3)-one | Capsules 55 mg Average 6 daily | Not recommended. Relatively ineffec tual Hypersensitiv ity and idiosyncrasy noted. |
| ANTISTINE (Ciba) | Phenazoline hydro chloride | Tablets 100 mg Ophthalmic solu tion 0.5% Nasal solution, 0.5% isotonic buffered. | Ophthalmic and na sal solutions particu larly effective. Use 1 to 3 drops every few hours as needed. Tablets low potency and may produce wakefulness |
| BENADRYL (Parke Davis) N N R. | Diphenhydramine hydrochloric acid | Kapsals 25 mg 50 mg Elixir (0.25%) 4 cc = 50 mg Injectable (1%) 5 cc = 50 mg Cream (2%) Emplets (delayed action) 50 mg Kapsals 50 mg with 10 mg ephedrine | Kapsals and Elixir efficacious and Coun cil approved but cause considerable drowsiness Injectable solution for intramuscular and intravenous uses. Employ cream as antipruritic |
| CHLOR TRIMETON MALEATE (Schering) | Chlorprophe n pyr tidamine maleate | Tablets 4 mg | Smallest effective dose with minimum side effects and rela tively high therapeutic efficacy |
| DECAPRYN (Merrell) | Doxylamine succi nate | Tablets 25 mg | Effective and pro tracted action caus ing considerable drowsiness |
| DIATRIN HYDRO CHLORIDE (Warner) | N N-dimethyl N phenyl N (2 thieryl methyl) ethylenedia mine mono hydro chloric acid | Tablets (sugar coated) 50 mg | Effective and of low toxicity |
| DRAMAMINE (Searle) | Beta dimethylami noethyl benzohydryl ether 8-chlorotheo phyllinate | Tablets 100 mg | Seasickness spe cific |
| HAPAMINE (Parke Davis) Hista mine Azoprotein | Histamine and de spectated horse se rum globulin for antihistamine immuni zation | Vial 5 cc Inject subcutaneously 0.01 cc and in crease by 0.05 cc to maximum dose of 1 cc at intervals of four days if no reac tion | Not recommended Prefer use of anti histamines orally |

**COMMERCIALLY AVAILABLE HISTAMINES HISTAMINASES AND
ANTIHISTAMINES (HISTAMINE ANTAGONISTS) (Continued)**

| Trade Name and Manufacturer | Chemical Name | Available Preparations and Doses | Notes |
|---|--|--|---|
| HISTADYL (Lilly) | Thenyl pyramine hy drochloric acid | Pulvules, 25 mg., 50 mg 100 mg Eosinols, 50 mg Syrup (5 cc. = 25 mg) Cream (2%) Pulvules histadyl 25 mg., ephedrine 8 mg Ampula, 1 cc. = 20 mg Ophthalmic oint ment 0.5%. | Effective with occa sional drowsiness. |
| HISTAMINE PHOS- PHATE or DIPHOS- PHATE (Abbott, Lilly) | Beta trimethylamine | Ampuls 0.275 mg (0.1 mg his- tamine base) and 2.75 mg (1 mg histamine base) | As diagnostic aid in gastric acidity test (p 3722) As desensiti- zation agent (p 4210) |
| HYDRYLIN (Searle) | Diphenhydramine (25 mg) with aminophyl- lin (100 mg) | Tablets 25 mg Elixir (8 cc. = 1 tablet) | Effective especially in bronchospasm, due to synergism with aminophyllin. |
| NEO ANTERGAN MALEATE (Merck) | Pyrenisamine male- ate | Tablets 25 mg 50 mg | Highly effective Side effects relatively fre- quent. |
| NEOHETRAMINE N.N.R. (Wyeth) | Thonzylamine hy drochloric acid | Tablets 25 mg 50 mg 100 mg Syrup 25 mg = 4 cc | Highly effective Only occasional side ef- fects |
| NETHAPHYL (Merrell) | Nethamine hydro- chloric acid and theophylline | Capsules | See <i>Hydrilin</i> |
| PERAZIL (Burroughs come) | 4-Chlorobenzhydryl piperazine monohy- drochloride | Tablets 50 mg | Side effects infre- quent. Single 50 mg dose generally pro- vides relief for 2 to 24 hours. |
| PHENERGAN | N-dimethylamino-2 propyl 1 phenothia- zine | | Rarely used. |
| PYRIBENZAMINE N.N.R. (Ciba) | Tripeleminamine hy drochloric acid | Tablets 50 mg (delayed action) 50 mg 25 mg with 12 mg ephedrine Elixir (1 cc. = 1 mg) Ointment, 2% Cream, 2% Nasal solution, 0.5% | Highly effective Council approved. Rare side effects |
| TAGATHEN (Lederle) | Chlorothal citrate | Tablets 25 mg Ointment, 2%. | Effective Rare side effects. |

**COMMERCIALLY AVAILABLE HISTAMINES HISTAMINASES AND
ANTIHISTAMINES (HISTAMINE ANTAGONISTS) (Continued)**

| Trade Name and Manufacturer | Chemical Name | Available Preparations and Doses | Notes |
|--|--|--|-------------------------------------|
| THENYLENE hydro- chloric acid N R (Abbott) | Methapyrilene hy- drochloric acid | Tablets 50 mg., 100 mg (sugar coated) Cream, 2% | Effective but with side effects. |
| THEPHORIN (Hoffmann La Roche) | ■ methyl 9 phenyl 2 3 4 9) tetrahydro-1 pyridindene hydro- gen tartrate | Tablets 25 mg Syrup 1 cc = 25 mg Ointment, 5% | Effective. Rare side effects |
| TORANTIL (Winthrop) | Histaminase | Tablets 10 units | Ineffectual prepara- tion |
| TRIMETON (Schering) | Prophepyramine | Tablets 25 mg Ointment, 3% | Effective. Low tox- icity |

In addition to histamine antagonism many available preparations mildly depress the cerebrum reduce gastric secretion of hydrochloric acid and relax smooth muscle. Hence they have some non specific therapeutic value as sedatives antacids and antispasmodics.

Cerebral Depression Bed patients benefit by the combination of antihistaminic effect and sedation particularly when there are complaints of restlessness and itching.

For the ambulatory patient however cerebral depression may be a serious untoward response. Increased somnolence and disturbances of muscular co ordination may result in mental and manual inefficiency with increased accident hazard. To offset these untoward reactions antihistamines are profitably combined with adrenergic cerebral stimulants in commercial preparations such as pyribenzamine ephedrine benadryl ephedrine and histadyl ephedrine.

Gastric Antacid Reduction in gastric acidity and muscle tone is particularly useful in many patients who suffer as the result of hypertrophic gastritis. Histamine antagonists may provide comfort to symptoms resulting from hyperacidity hypermotility and spasmosis.

Smooth Muscle Depression Smooth muscle depression by the antihistamines is gainfully employed in the management of bronchospasm. Synergism between histamine antagonist and aminophylline is provided by preparations which contain both ingredients such as hydryllin and nethaphyl.

Toxicology

None of the histamine antagonists has important toxicology. Most produce annoying side effects such as somnolence lethargy amnesia muscle incoordination numbness of lips and tongue dizziness and digestive symptoms such as anorexia nausea vomiting abdominal cramps or diarrhea. Side effects usually are noted only after first administration of the preparation and disappear shortly thereafter. If one

product causes persistent untoward manifestations another antihistamine may be substituted

Comparison of the relative toxicities of benadryl and pyribenzamine (See Table p 4215) reveals that benadryl is much more likely to cause drowsiness vertigo numbness and asthenia whereas pyribenzamine occasionally produces headache If a toxic response to either preparation is encountered the other should be substituted for limited trial Thereafter the selection may be an unofficial product such as trimeton chlorotrimeton diastrin tagathen or thephorin

Of untoward manifestations only amnesia and muscular incoordination are frequently encountered On a few occasions manifestations of blood dyscrasia have been reported but these are indeed rare and respond to discontinuance of medication

Choice of Preparation

The choice of histamine antagonist depends on the nature of clinical manifestations the proposed route of administration and the presence or absence of toxic side effects

BENADRYL vs PYRIBENZAMINE

| Toxicity % | | |
|--------------------------------|-----------------|----------------------|
| | <i>Benadryl</i> | <i>Pyribenzamine</i> |
| Drowsiness | 43 | 85 |
| Nausea vomiting etc | 8 | 9 |
| Vertigo etc | 7 | 3 |
| Numbness | 6 | 1 |
| Asthenia | 45 | 2 |
| Headache | 0 | 25 |
| Symptom Relief % | | |
| Acute urticaria | 96 | 85 |
| Chronic urticaria | 87 | 70 |
| Pruritus | 20 | 31 |
| Asthma (all types) | 52 | 34 |
| Vasomotor rhinitis (all types) | 72 | 70 |
| Dermatitis (all types) | 66 | 57 |

Most experience with histamine antagonists has been with Council accepted benadryl and pyribenzamine It is suggested that the practitioner begin therapy with one or other of these tested preparations unless there is some particular indication for initial use of one of the presently unofficial products (p 4212) Thus for example dramamine is specific in seasickness and hydryllin and nethaphyl (which also contain aminophyllin) are seemingly more effective in the relief of bronchial asthma

The preference between benadryl and pyribenzamine so far as clinical manifestations are concerned is indicated above Pyribenzamine appears more effective as an antipruritic whereas benadryl is distinctly more valuable in the relief of asthma and the urticarias

Route of Administration

In part the choice of histamine antagonist depends on the proposed route of administration

ANTI-HISTAMINES ROUTES OF ADMINISTRATION

Oral

Choose Council approved pyribenzamine or benadryl II ineffective or productive of side effects substitute neo-antergan diastrin, histadyl neohetramine tagathen thephorin trimeton etc (p 4212)

Oral (delayed)

For nocturnal symptoms especially use delayed action tablets of pyribenzamine or histadyl taken on retiring

Parenteral

Inject intramuscularly preferably but intravenously if necessary 1% benadryl (5 cc = 50 mg)

Ophthalmic Solution

Use collyrium of 0.5% antistine

Nasal Solution

Instill 0.5% antistine or 0.5% pyribenzamine (applied in nebulizer)

Skin Cream or Ointment

Apply 2% benadryl 2% pyribenzamine 2% tagathen, 2% histadyl or 5% thephorin

Therapeutics

Antihistamines are recommended for I specific prophylaxis of histamine type hypersensitivities (p 4166) II specific palliation of histamine type hypersensitivities (p 4167) III possibly specific prophylaxis in tuberculin type hypersensitivities (p 4169) and IV non specific effects in a variety of unrelated conditions

I *Specific Prophylaxis of Histamine type Hypersensitivities* Antihistamines are prescribed for prophylaxis (a) on exposure to highly sensitizing non bacterial antigens such as serum pollen cosmetics endocrine products sulfonamides etc (p 4179) (b) in infections by highly sensitizing bacteria (hemolytic streptococci tubercle bacilli etc)

SCHEDULE FOR ADMINISTERING PYRIBENZAMINE OR BENADRYL (mg)

| Day | Breakfast | Lunch | Supper | Bedtime |
|-----|-----------|-------|--------|---------|
| 1 | 50 | 50 | 50 | 0 |
| 2 | 50 | 50 | 50 | 50 |
| 3 | 50 | 50 | 50 | 100 |
| 4 | 50 | 50 | 100 | 100 |
| 5 | 50 | 100 | 100 | 100 |
| 6 | 100 | 100 | 100 | 100 |
| 7 | 100 | 100 | 100 | 150 |
| 8 | 100 | 100 | 150 | 150 |
| 9 | 100 | 150 | 150 | 150 |
| 10 | 150 | 150 | 150 | 150 |

As preventives oral administration of antihistamines is continued for at least two weeks after last known exposure to sensitizing agents

II *Specific Palliation of Histamine type Hypersensitivities* Histamine antagonists are used for active palliation of manifestations due to

histamine type hypersensitivity (p 4167) These include anaphylactic shock (p 549) serum sickness (p 548) seasonal vasomotor rhinitis (p 2098) bronchial asthma (p 2101) vernal conjunctivitis (p 1651) phlyctenular keratoconjunctivitis (p 1650) atopic dermatitis or infantile eczema (p 3342) contact dermatitis or dermatitis venenata (p 3330) dermatitis medicamentosa (p 3335) urticaria or hives (p 3345) angioneurotic edema (p 3349) disseminated neurodermatitis (p 3343) and idiopathic pruritus (p 1916)

For symptomatic treatment antihistamine is given as soon as hypersensitivities develop Variables in therapeutics are dependent on the nature of the symptoms the route of administration and the intensity of clinical manifestations For guidance the following suggestions are offered

- 1 Under ordinary circumstances oral administration suffices For first choice employ Council accepted pyribenzamine or benadryl
- 2 On the basis of lesser toxicity select pyribenzamine rather than benadryl except in urticarias and bronchospasm
- 3 For ordinary purposes total initial daily dose of either preparation is 200 mg The schedule (p 4216) of increasing quantities is followed until symptomatic relief is obtained provided that toxic side effects are not sooner encountered
- 4 With symptoms of great severity start the schedule with maximum amounts (as for tenth day in Chart p 4216) Decrease the total daily dosage as per schedule if the responses warrant
- 5 When symptomatic relief is obtained without untoward manifestations continue the optimum dose for several days Then gradually cut the dose provided that the patient remains comfortable
- 6 With persistent side effects from pyribenzamine and benadryl try products of minimum toxicity such as chlorotrimeton diatrin tagathen thephorin and trimeton
- 7 If speed of action is required inject 1% benadryl intramuscularly or intravenously For initial injection give 2 to 5 cc of 1% solution (20 to 50 mg) Repeat at hourly intervals provided that the patient does not get too drowsy Give slow intravenous injection if necessary after dilution with sufficient sterile saline to total 20 cc of solution
- 8 If injection of antihistamine alone does not suffice to control serious clinical manifestations (such as angioneurotic edema obstructing respiratory passages) take advantage of the synergism with adrenergic by use of combined oral product (histadyl with ephedrine) by simultaneous subcutaneous or intramuscular injection of 0.5 to 1.0 cc of epinephrine hydrochloride (1:1000) or by local spray of epinephrine hydrochloride 1:100
- 9 In bronchospasm add to antihistamine adrenergic synergism by simultaneous use of aminophyllin Latter may be exhibited in a combination product (hydryllin diatrin or nethaphyl) or separately by mouth or intravenously (0.5 gm)

- 10 Oral or parenteral antihistamine may be supplemented by local or topical applications using ointments of 2% benadryl 2% pyribenzamine 2% tagathen or 5% thephorin by collyrium of 0.5% antistine or by nasal instillations of 0.5% antistine or pyribenzamine
- 11 For patients who develop nocturnal symptoms (such as bronchospasm) prescribe pyribenzamine or histadyl in enteric coated products at bedtime
- 12 After recovery instruct the patient to resume antihistamine on fresh exposure to offending allergen or if there is recurrence of symptoms

III Possibly Specific Prophylaxis of Tuberculin type Hypersensitivities The action of antihistamine in tuberculin type hypersensitivities (p 4169) is not as obvious as in histamine type varieties. The purpose of therapy is prevention of future damage rather than palliation of present symptomatology. Because of the gravity of tuberculin type hypersensitivities (p 4174) any measure that gives promise for prophylaxis and holds no threat for increasing damage is highly recommended even though the rationale for therapy is admittedly hypothetical.

Our personal preferences for use of antihistamines in tuberculin type hypersensitivities are summarized in the following axioms:

- 1 Administer antihistamine routinely to every individual exposed to infection with highly sensitizing microorganisms such as the hemolytic streptococci or tubercle bacilli
- 2 Administer antihistamine routinely to the hypersensitive patient (p 4165) who is exposed to any infectious agent or to potentially sensitizing drug or biological (serum vaccine all biologicals antibiotics but especially sulfonamide and penicillin salicylate iodide phenolphthalein antithyroids dilantin etc.)

IV Non specific Indications Non specific indications for use of antihistamines are so varied that they are best presented in chart form.

NON SPECIFIC INDICATIONS FOR ANTIHISTAMINE THERAPY

| Indication | Action |
|--------------------------------------|---|
| Gastric hyperacidity (p 1769) | Diminishes secretion of hydrochloric acid. |
| Gastro-intestinal spasmosis (p 1999) | Relaxes smooth muscle |
| Cerebral stimulation | Mild sedation and hypnosis |
| Chronic hypertrophic gastritis | Reduces secretion and relaxes muscle |
| Dysmenorrhea (p 2561) | Relaxes smooth muscle |
| Headache (p 1512) | Antihistaminic effect (?) |
| Motion sickness (p 1487) | Dramamine (100 mg tablets) specific for prevention and palliation |
| Morphine addiction (p 3861) | Reduces severity of withdrawal symptoms |
| Paralysis agitans (p 1505) | Reduces tremor when given with scopolamine etc |
| Radiation sickness (p 3798) | Try as prophylactic and palliative |
| Streptomycin toxicity (p 4610) | Reduces incidence and severity of eighth nerve damage |
| Angina pectoris (p 890) | Said to be palliative |
| Acute nephritis (p 179) | Seems to speed recovery in poststreptococcal nephropathies |
| Common cold (p 391) | Reduces local discomfort in those with bacterial hypersensitivity |
| Tuberculosis (p 4597) | Under investigation for possible synergistic efficacy with antibiotic |

ANTI INFECTIVE THERAPY

In 1932 first reports of successful sulfonamide treatment of human infectious disease inaugurated an era to which future medical historians may refer as "The Golden Age of Therapeutics." In the few years that have elapsed between that momentous date and preparation of this Progress Volume accomplishments in the fields of anti infective therapy have transcended in their importance the sum of all previous contributions.

The following brief historical survey is intended primarily for broad orientation. It may serve also to caution practitioners that continued and continuing progress preclude dependence upon static therapeutic routines. Alert attention to current medical research is required of those who strive to make readily available to their patients the boons of pending innovations.

The various anti infective agents such as arsenicals, antibiotics, sulfonamides, etc., are discussed separately and will be found in alphabetical order.

EARLY ANTI INFECTIVE TREATMENT (1796)

Prior to the early nineteenth century the great pioneer contributions to medicine were essentially of diagnostic significance. After the contagious nature of certain diseases was established, many specific bacteria were later identified as causative agents in clinically definitive syndromes.

Unfortunately these diagnostic triumphs were for the most part therapeutically infertile. Indeed, the first eighteen hundred years A.D. recorded only two significant dates in the development of anti infective treatment. In 1638 the Countess of Chinchon, living on a Pacific island off the coast of Peru, was cured of an attack of fever, presumably malaria, by administration of a decoction prepared from cinchona bark, the active ingredient of which was undoubtedly quinine. And on May 13, 1796, the immortal Jenner, following the precepts of Lady Montagu, inoculated a small boy with matter from vesicles of cowpox and later was able to demonstrate (July 1796) that the youngster had been rendered immune to smallpox.

MIDDLE AGES OF ANTI INFECTIVE TREATMENT (1796-1894)

The hundred years that followed Jenner's discovery added three notable contributions to the annals of anti infective therapy. In 1865 Louis Pasteur inoculated a child, bitten by a rabid dog, with attenuated Rabies Vaccine. In 1890 Behring and Kitasato prepared Antitoxic Serum for neutralization of soluble tetanus toxin; and, in 1894, Pfeiffer developed an Antibacterial Serum to combat invaders that do not secrete soluble toxin. Thus, at the advent of the twentieth century there had been established the principles of chemotherapy and vaccine therapy and of serotherapy with antitoxic and antibacterial products.

DAWN OF THE GOLDEN AGE OF THERAPEUTICS (1894-1932)

The thirty-eight years which intervened between Pfeiffer's contribution and first reports (1932) of clinical use of sulfonamide were richer in promise than accomplishment. On the positive side the most notable achievement was the epochal discovery of salvarsan, the six hundred and sixth product prepared by Ehrlich in his search for a chemical to sterilize blood. For his experimental infectious disease Ehrlich chose syphilis, but he expressed the hope that there might be found, for each individual infection, a sterilizing chemical of sufficient potency to kill invading micro-organisms without inflicting too serious damage on the tissues of the host.

During these dawn years Ehrlich's contributions to chemotherapy did not stand alone. Vaccine and serum therapies were extended, antimeningococcus and type-

specific antipneumococcus serums were perfected. By standards of their day these anti-infective agents were accounted major therapeutic triumphs. No contemporary would have believed that in the year 1950 they would already be obsolete.

In contrast to the accomplishments of the Dawn Period, there were bitter disappointments. Ehrlich's vision of *sterilatio magna* was not translated into terms of reality for the blood in syphilis did not clear after a single injection of salvarsan. It became necessary to devise longer and longer courses of antisyphilitic treatment until, finally, the Cooperative Clinical Group laid down a minimum plan of eighteen months of therapy. Not only was arsenotherapy less efficacious than was originally reckoned but host toxicity proved more menacing. Clinicians reported immediate and delayed untoward responses that varied in importance from minor discomforts to fatalities. Newer arsenicals, reputedly of greater therapeutic efficacy and lesser toxic potential, were devised. But the goal of the magic bullet was never attained; it was not possible to eliminate idiosyncrasy to and poisoning by arsenic.

Despite these shortcomings, arsenotherapy of syphilis was the most successful of chemotherapeutic contributions. Other chemical substances, hopefully prepared to combat various bacterial invaders, were lethal in the test tube (*in vitro*) but curiously inactive after introduction into the body (*in vivo*).

In like manner, treatment with vaccines and most serums revealed deterrents. Vaccines and most antitoxic serums were demonstrably useful in prophylaxis but disappointing in active treatment of disease. Technical difficulties limited the use of heterologous antitoxic and antibacterial serums; intravenous injections of considerable bulk proved too cumbersome for routine use in the office or the home of the patient; additionally, the occurrence of unpredictable anaphylactic and allergic reactions added so grievously to treatment risk that many practitioners feared to employ these anti-infective agents in their private practices.

To the disappointment of the Dawn Period, must be added the record of two lost opportunities of tragic magnitude. In 1908 Paul Gelmo prepared sulfanilamide for the German dye industry. This accomplishment was reported and filed—and then forgotten for a quarter century. In 1929 penicillin, the most powerful and least toxic anti-infective agent, was described and isolated. Nevertheless, for more than a decade following Fleming's epochal discovery, this giant among therapeutic preparations was used only to ensure the growth of penicillin-resistant organisms in bacterial culture mediums. In their classic monograph on penicillin, Anderson and Keefer state: "It is remarkable to recall that penicillin was administered to a patient in this country (United States of America) for the first time only five years ago (1942) and that only two years ago (1945) were the difficulties of producing the drug overcome to the extent that its sale and distribution could be freed of all limitations and regulations."

The meager therapeutic harvest of these years (1894–1932) is best reflected in standard texts of the period. Thus Allbutt and Rolleston (*A System of Medicine*, Macmillan, 1905) listed forty-seven common infectious diseases. For thirty-two of these (approximately 70%) only symptomatic or supportive therapy was recommended: prophylactic vaccination, efficacious by present standards, was available for five (typhoid, fever, cholera, plague, smallpox and rabies); antitoxic serum for three (tetanus, diphtheria and scarlet fever); antibacterial serum for two (anthrax and bacillary dysentery); and the roster of chemotherapeutic agents included only quinine for malaria, ipecac for amebic dysentery, salicylate for rheumatic fever, and mercury and iodides for syphilis.

Seven years later Osler and MacCrae (*Modern Medicine*, Lea and Febiger, 1913) added antimeningococcus serum as the single significant contribution of the period that elapsed between publication of the English multivolume standard text and its American counterpart. (By this time sulfanilamide had already reappeared on the shelf for five years!)

Twenty-five years later, in the thirteenth edition of Osler's one-volume *Principles and Practice of Medicine* (Appleton-Century, 1938), three decades after Gelmo synthesized sulfonamide and almost a decade after the discovery of penicillin, Dr. Henry Christian could supplement the list of useful anti-infective agents with only the following:

1. Arsenic for the treatment of spirochetal diseases, including syphilis.
2. Antimony for lymphopathia venereum and leishmaniasis.
3. Quinacrine and plasmoquin, for malaria.
4. Several newer drugs for amebic dysentery.

- 5 Germanin, for trypanosomiasis
- 6 Vaccines for whooping cough and glanders
- 7 Type specific antipneumococcus serums
- 8 Immune convalescent serums for whooping cough measles and poliomyelitis
- 9 A total of forty-eight lines devoted to sulfanilamide of these twenty two described its toxicity and twenty-eight its therapeutic value
- 10 Concerning penicillin, not even a listing

Of these addenda already obsolescent are sulfanilamide immune convalescent serums type specific antipneumococcus serum quinaquine and plasmochin, in malaria and antimony in lymphopathia venereum. And arsenotherapy has been relegated to an ancillary status in the treatment of treponematoses

THE GOLDEN AGE OF THERAPEUTICS PERIOD I (1932-1946)

The Golden Age of Therapeutics was born unobtrusively in 1932 when Domagk demonstrated the clinical value of sulfanilamide. It was not until 1935 however that there appeared more than an occasional case report. Even the texts of 1938 as detailed in previous paragraphs contained only sketchy and tentative references to the most potent anti-infective agent that had been, up to this time in medical history acquired by man.

Beginning with 1940 the medical literature was flooded with reports of sulfonamide miracles. The list of conquered or conquerable diseases was lengthened to include those caused by staphylococci streptococci pneumococci meningococci gonococci *V. comma* (cholera) *H. ducreyi* (chancroid) and *H. influenzae*. Even therapeutic nihilists succumbed to evidence that unfolded before their eyes and the term specific took on new meaning in therapeutics.

Chemists produced new soluble and insoluble sulfonamide derivatives pharmaceutical laboratories prepared tablets solutions drops ointments suppositories and salves bacteriologists classified sensitive and resistant organisms clinical pathologists devised tests for determining levels in blood urine spinal and other tissue fluids clinicians reported on the variety of infectious diseases which responded or which failed to respond, to sulfonamides administered orally subcutaneously intramuscularly intravenously intraperitoneally and intrathecally warnings were issued as to toxicity methods were devised for control of the drug and protection of the patient and particular indications for use of antibiotic in specialist fields were given by surgeons ophthalmologists otologists rhinologists gynecologists obstetricians neurologists urologists dermatologists laryngologists gastroenterologists and pediatricians.

Even while the first of these momentous therapeutic accomplishments was being recorded Chain and the Floreys (1940) were preparing to report on the therapeutic efficacy of penicillin in the treatment of human disease. It soon became obvious that the practically non-toxic penicillin was effective against many sulfonamide sensitive organisms such as staphylococci streptococci pneumococci meningococci and gonococci. But the new antibiotic also could be employed successfully in sulfonamide resistant invasions including tetanus gas gangrene anthrax diphtheria and the treponematoses most particularly syphilis. Thus sulfanilamide forgotten on a shelf for more than twenty five years and hailed as the wonder drug in 1935 within a period of five years was being superseded for many of its indications by penicillin.

The harvest of the First Period of the Golden Age transcended even the miracles of sulfanilamide and penicillin. In 1942 para-aminobenzoic acid was revealed as a near specific in the treatment of rickettsial infections (Snyder Maier and Anderson). Oral administration of this new anti-infective agent hastened recovery in formidable diseases such as typhus Rocky Mountain spotted and tsutsugamushi fevers.

Progress also was reported in the use of antimalarials anti-amebics and other anti-protozoans. Quinine was variously being replaced by or supplemented with quinaquine (atabrine) pentaquine (SN 13276) isopentaquine chloroquine (arslen SN 7618) and chlorguanide (paludrine SN 12837). Emetine first introduced in 1912 as an anti-amebic agent was being replaced by or supplemented with chiniofon (1921) acetarsone (1924) vioform (1931) and carbarsone (1931). The antiprotozoal activity of antimony compounds became more clearly established and the National Formulary approved of trivalent and pentavalent compounds including stibophen stibamine and ethylstibamine.

Finally to crown the accomplishments of these crowded years Waksman, Schatz and Bugie isolated streptomycin (1944). To the list of invasions that responded to anti-infective therapy now were added many urinary infections, colon bacteremia, whooping cough, H. influenzae meningitis, brucellosis, tularemia, Klebsiellae and certain types of tuberculosis.

Reflecting the momentous advances of the first fifteen years of the Golden Age of Therapeutics, the second printing (1947) of *The Integrated Practice of Medicine* listed ninety-nine specific infections. In these, effective prophylaxis was available for eighteen, effective active treatment, by serum or vaccine, for two, effective treatment with anti-infective agents for sixty-one.

In contrast to the 70 per cent of infections for which only supportive or symptomatic therapy was described in the texts of 1905 and 1908, it was now possible to claim control or cure for 71 per cent of diseases due to invasion by living micro-organisms.

THE GOLDEN AGE OF THERAPEUTICS PERIOD II (1946-1950)

The four years which have elapsed between publication of the first edition of *The Integrated Practice of Medicine* (1946) and this current Progress Volume (1950) have seen further advances in anti-infective therapy. In 1947 Burkholder announced the discovery of chloramphenicol (chloromycetin) and Duggar of aureomycin. With the advent of these preparations, para-aminobenzoic acid became obsolescent in the treatment of rickettsial disease and the roster of diseases which respond to the antibiotics again lengthened to include rickettsioses, typhoid fever, salmonellosis (the paratyphoid fevers), shigellosis (bacillary dysentery), psittacosis, granuloma inguinale, lymphopathia venereum, brucellosis and virus pneumonitis.

And the end is not yet! In 1949 Waksman added to his laurels by preparing neomycin and dihydrostreptomycin to supplement or perhaps to replace streptomycin, and there began to appear preliminary reports of newer antibiotics including polymyxin, aerospirin, bacillomycin, suramin, para-aminosalicylic acid, subtilin, erythrol terramycin, etc.

* *

Thus medical science, almost impotent against invasion by living micro-organisms up to the beginning of the 20th century, succeeded in its conquest of coccal, bacillary, treponemal, rickettsial and amebic invasions, as well as many protozoal and helminthic diseases. Only the viruses remained as a challenge, and their ranks began to crumble with the surrender of virus pneumonitis and lymphopathia venereum to aureomycin and chloramphenicol. In a period when the atomic physicist had unwillingly given civilization its most lethal weapon, medicine gained almost complete mastery over microbial invasions of the human body!

ANTIMALARIALS

[See under Malaria (p. 4392)]

ANTIMONIALS

Interest in the antimonials has been stimulated by introduction of less toxic preparations of proven parasitocidal efficacy.

Available Products

Trivalent pentavalent and aromatic diamidine preparations of antimony are available. Trivalent products appear most efficacious in the treatment of schistosomiasis and filariasis pentavalent in systemic leishmaniasis (kala azar) and aromatic diamidines for tumor inhibiting properties in multiple myeloma. In each category experts express differences of opinion as to the preparation of choice hence the practitioner is confounded by multiple conflicting recommendations. Under these circumstances the least toxic product warrants trial under rigid precautions.

Therapeutics

The local use of antimonials has been abandoned. Tartar emetic is no longer employed as pustulant, emetic, nauseant and expectorant.

After absorption antimony compounds are of clinical value in the treatment of infections due to certain bacteria, fungi, viruses, trypanosomes and helminths. Additionally antimony may possess tumor inhibiting properties as best illustrated in multiple myeloma.

Because of its toxicity antimony yields preference to more benign anti-infective agents as illustrated by substitution of suramin in trypanosomiasis and of aureomycin in lymphopathia venereum and granuloma inguinale.

However in the presence of definitive indications for therapy with antimony the accompanying table lists preferences that appear best suited to the requirements of the practitioner whose first consideration must be prevention of host toxicity (*noli nocere*). As to the preferred route of administration oral preparations are irritating and so poorly absorbed that their therapeutic benefits are almost completely nullified. Intramuscular deposits decrease efficacy but are preferred to intravenous injections which have added toxicity.

THERAPEUTICS OF ANTIMONIALS

| Preparation | Indications | Comments |
|--|--|--|
| TRIVALENT | | |
| Antiluamune (Lithium Antimony thiomaleate) 6% solution | Filariasis Mucocutaneous leishmaniasis | Prefer hextrazan and ethylstibamine Prefer ethylstibamine or stibophen. Use initial probatory intramuscular injection of 1.5 cc. Follow by 3 cc daily for 1 month. Prefer USP Sodium Salt |
| Antimony and Sodium Tartrate BP | | |
| Antimony and Potassium Tartrate USP (Tartar Emetic) ampuls 5 cc of 1% (Abbott, Lilly, Parke Davis) | Granuloma inguinale Mucocutaneous leishmaniasis Lymphopathia venereum Schistosomiasis | Prefer aureomycin or ethylstibamine Prefer stibophen Prefer aureomycin. Choice with stibophen and ethylstibamine Most experts prefer intravenous injections of freshly prepared 2% solution in sterile distilled |

THERAPEUTICS OF ANTIMONIALS (Continued)

| Preparation | Indications | Comments |
|---|---|--|
| Antimony Thioglycollate USP (Hynson) 0.4% in 10 and 20 cc ampuls | | water After probatory dose of 1 cc increase by daily increments of 1 cc to total 15 cc Continue daily injections of 5 cc to total 90 cc unless toxicity occurs Prefer less toxic antimony sodium thioglycollate |
| Antimony Sodium Thioglycollate USP (Hynson) 0.5 in 10 and 20 cc ampuls | Filariasis Granuloma inguinale Schistosomiasis Trypanosomiasis | Prefer hetrazan and ethylstibamine Prefer aureomycin. Prefer stibophen Prefer suramin. Inject intravenously 10 to 20 cc every third day for 15 to 25 doses to total 150 to 500 cc unless toxicity occurs Prefer aureomycin. |
| Diamin (Parke Davis) (2%) | Granuloma inguinale Mucocutaneous leishmaniasis | Prefer stibophen or ethylstibamine After initial probatory intravenous injection of 1 cc increase to 2 cc and give every other day for 5 to 15 doses |
| Fuadin See Stibophen Lithium Antimony Thiomaleate See Anthiolamine Neostumosan See Stibophen | | |

TRIVALENT

| | | |
|---|--|--|
| Stibophen N.F. (Neostumosan Fuadin) (Winthrop) 6.3% in 15 cc ampuls | Mucocutaneous leishmaniasis Schistosomiasis | First choice First choice with tartar emetic and ethyl tibamine For initial probatory intramuscular injection give 1.5 cc Increase to 3.5 cc the second day and to maximum dose of 5 cc on the third day Thereafter give 5 cc every day to total 40 cc To prevent relapse repeat 15 cc once weekly for two months Course may be repeated after ten-day rest. |
| Tartar Emetic See Antimony and Potassium Tartrate | | |

PENTAVALENT

| | | |
|---|---|--|
| Ethylstibamine (Bayer 693 Neostibosan) (Winthrop) 0.3 gm. in ampuls | Systemic leishmaniasis (Kala Azar) Filariasis Schistosomiasis | First choice Choice after hetrazan. First choice |
|---|---|--|

THERAPEUTICS OF ANTIMONIALS (Continued)

| Preparation | Indications | Comments |
|---|---------------------------------------|--|
| | Granuloma inguinale Paragonimiasis | Prefer aureomycin. Choice after emetine Add 1 cc of sterile diluent to make 5% solution for intravenous use Inject 4 cc for initial probatory dose If no toxicity increase to 1 cc and give daily for ten to seventeen days Add 1.2 cc of sterile diluent for intramuscular use Inject 0.2 cc for initial probatory dose particularly for infants and children If tolerated, increase daily by increments of 0.2 cc to 1.2 cc for adults unless toxicity occurs earlier |
| Neostam See Stibamine gluco- side | | |
| Neostibosan See Ethylstibamine | | |
| Solustibosan (Bayer 561) | | Not available |
| Stibamine Gluco- side (Neostam) (Bur- roughs Wellcome Vials of 0.1 0.5 1 and 5 gm) | Systemic leishmaniasis | Prefer Ethylstibamine Prepare a 4% solution by dis- solving 100 mg in 2.5 cc sterile distilled water Inject intra- venously or intramuscularly 2.5 cc per 100 pounds of body weight every second day for 30 injections (total 3 gm per 100 pounds) |
| PENTAVALENT | | |
| Stibamose | | Not available |
| Stibatin | | Not available |
| Stibosan | | Not available |
| Urea stibamine | | Not available Regarded as preparation of choice (Snapper) in systemic leishmaniasis After probatory intravenous doses of 50 100 and 150 mg in 10 cc distilled water give 200 mg every other day for 12 to 15 injections |
| AROMATIC DIAMIDINES | | |
| Pentamidine (SN 9406) | Investigational use | May be less toxic than ethylstibi- mine |
| Phenamidine (SN 9404) | Investigational use | |
| Propamidine (SN 6) | Investigational use | |
| Stilbamidine | Investigational use | Trial in multiple myeloma Prepare a 1% solution in dis- tilled water Inject intravenously 2.5 cc per 100 pounds of body weight Increase every second day by increments of 2.5 cc to total 15 cc per injection Try to give a minimum of 10 injections Course may be repeated after recovery period of one month |

Toxicology

Untoward responses to antimonials include immediate and delayed symptoms. Most of the former are encountered with intravenous injection. They include nausea vomiting fall in blood pressure syncope sweating diarrhea urticaria respiratory depression cough headache abdominal pain and convulsions. Many of these are preventable by scrupulous attention to details of injection: certain preparations (antimony potassium tartrate) must be freshly prepared; sterile distilled water must be used as diluent; ampuled products must not be heated and should be injected within a few moments after exposure to the air; the vein must be cleanly negotiated so that there is no perivenous leakage; injections must be given at an exceedingly slow rate (less than 1 cc per minute) since much of the immediate toxicology resembles the syndrome of speed shock (pp 924 3774).

Delayed toxic manifestations resemble those of arsenic poisoning (p 122). They include albuminuria hematuria oliguria and anuria suggesting renal irritation; jaundice as a hepatotoxic manifestation; toxicoderms (pp 122 3339); drug fever (p 24); arthralgias; neurotoxic manifestations including headache peripheral neuritis and paresis; thesias; blood dyscrasias such as leukopenia anemia and thrombocytopenia; irritation of the gums as in bismuth poisoning (p 1677); and diarrhea. Toxicology is usually variable but in general pentavalent preparations are least noxious followed by trivalent and then aromatic diamidines.

Antidote

Injections of BAL (pp 767 4251) are antidotal as in arsenic poisoning (p 122).

ANTIRETICULAR CYTOTOXIC SERUM (ACS)

ACS is a Russian product prepared by Bogomolets and alleged to have efficacy in the treatment of arthropathies and malignancies.

Available Products

There are no commercially available preparations of ACS.

Therapeutics

ACS is recommended in an initial dose of 0.5 cc followed, at intervals of three to five days, by doses of 1 cc and 1.5 cc. A series of three injections constitutes a complete course. Second and third series may be given at six week intervals.

American observers have noted no significant difference between a group of patients with rheumatoid arthritis treated with ACS and those given a neutral control serum. The alleged effects of ACS on wounds fractures malignancy pulmonary abscesses empyema septic infections adnexal disease puerperal fever gonorrheal peritonitis scarlet fever typhus rheumatic fever multiple sclerosis schizophrenia ozena etc appear no more promising to objective investigators than its efficacy in rheumatoid arthritis and other arthropathies.

ANTIVENIN CROTALUS

[See Snakebite]

ANTIVENIN (LATRODECTUS MACTANS)

An antitoxic serum prepared by immunization of healthy horses against venom of black widow spiders

Available Products

Lyovac Antivenin NNR (Mullford Sharp & Dohme Wyeth) Package contains 1 cc vial of normal horse serum (1:10) for use in ophthalmic and intracutaneous tests of sensitivity; ampul of 25 cc of sterile distilled water; and vial containing sufficient amount of lyophilized antivenin to be the equivalent of 25 cc of restored double concentration antivenin when contents of ampul of distilled water are added

Therapeutics

[See Arachnidism p 4228]

ANTRYCIDE

Antrycide (4-amino-6-(2-amino-6-methylpyrimidin-4-yl)-quinoline-1,1-dimethoxy) or M 7555 is a white crystalline powder soluble in water

Available Products

Antrycide is product of Imperial Chemical Industries is not yet available for human use (1950)

Therapeutics

A single injection of antrycide cures cattle of *Trypanosoma congolense* and *Trypanosoma vivax* infections. It has also been successful against *Trypanosoma brucei* infections in cattle, horses and dogs; against *Trypanosoma evansi* in cattle and *Trypanosoma simiae* in pigs (p 4594)

In cattle experiments antrycide apparently protects against *T. congolense* for six months. In rare instances of recurrence second treatments have proven satisfactory (JAMA 139:1017, 1949)

Toxicology

Antrycide has no significant side reactions so far as is presently known

ARACHNIDISM

[Spider Bite Black Widow Bite]

Principles of Diagnosis and Treatment

1 With the exception of the product of the black widow (*Latrodectus mactans*) spider venoms produce only local discomfort and inflammation. Even the hairy tarantula despite its vicious appearance does not introduce significant amounts of toxin into the body.

2 The ordinary spider bite is allayed by application of wet dressings and administration of antihistamine locally and orally. An ointment of 2% pyribenzamine (or any other preparation of similar activity) is rubbed vigorously into the area of the bite. Additionally tablets of 50 mg of the antihistamine are given orally every hour until relief is afforded.

3 In contrast to the ordinary spider bite the venom of the black widow is exceedingly toxic and may produce fatality. Since the black widow thrives in moist dark places favorite sites for inoculation are the genitals of those who have used an outdoor privy or who have squatted in the great open spaces for purpose of evacuation.

4 Within a few moments after being bitten the patient usually complains of intense local pain radiating to abdomen, legs, chest or back. Shortly afterwards there may occur vomiting, tremors of the hands, fibrillary twitching of face and neck, headache, precordial distress, hyperesthesia of the sole of the feet, sweating and respiratory difficulties. Examination at this time may disclose fever, hyperreflexia, elevation of blood pressure, tachycardia, priapism, a macular eruption and an abdomen so rigid as to suggest an acute surgical emergency. In extreme instances the patient develops convulsion or becomes comatose and may rapidly succumb.

5 There is available a potent antivenin for *Latrodectus mactans* although specific therapy is rarely employed due to (a) delay in obtaining the preparation during the brief period of the acute emergency and (b) the danger of hypersensitivity reactions following its introduction.

Practical Management

Immediate Care

1 Give a slow intravenous injection of 10 to 20 cc of calcium gluconate. Despite urgency of symptoms maximum rate of injection must be kept below 1 cc per minute since otherwise the patient may develop flushing and congestion due to injected drug. Meantime send a member of the household for Lyovac Antivenin as marketed by Wyeth, Mulford or Sharp & Dohme (p 4227).

2 With another syringe inject intramuscularly an opiate such as 100 mg of demerol or 1 mg of dilaudid.

3 After injection of opiate or a substitute fill the syringe with 5 cc of 1% benadryl and administer antihistamine intramuscularly.

4 While these injections are being given have a tub filled with hot water Prepare to immerse the patient as soon as possible

5 If symptoms have not been controlled by the combination of calcium opiate and warm bath inject intramuscularly 2 cc of neostigmine methylscllylate (1 2000) together with atropine sulfate 0.5 mg (1/120 grain)

6 With persistence of discomfort repeat intravenous injection of calcium

7 Continuing to alternate calcium antihistamine opiate and neostigmine determine relative sensitivity of the patient by history and by ophthalmic and cutaneous reactions to horse serum (p 554)

8 If patient is not hypersensitive restore lyophilized antivenin to a volume of 2.5 cc with diluent Inject intramuscularly unless symptomatic therapy has proven effectual

9 Immediately following serum injection give another 5 cc of 1% benadryl for antihistaminic effect

10 If relief has not been obtained repeat serum injections every fifteen to thirty minutes if necessary until the patient recovers or succumbs

11 In the hypersensitive individual with positive skin or eye tests try to avoid serum therapy unless the situation is desperate Under these circumstances attempt desensitization by intracutaneous injection of 0.1 cc of 1:100 dilution Every ten or fifteen minutes repeat the injection using increments of 0.1 cc until 1 cc of 1:100 solution has been administered After every second or third injection of serum give an additional 5 cc of 1% benadryl

12 When the patient can tolerate 1 cc of 1:100 dilution follow the same procedure with 1:10 dilution Start with 0.1 cc and increase by increments of 0.1 cc every ten or fifteen minutes until 1 cc of 1:10 dilution has been delivered

13 When patient has tolerated 1 cc of 1:10 dilution give 0.1 cc of undiluted antivenin Again increase by increments of 0.1 cc every ten or fifteen minutes until the total amount of 2.5 cc of undiluted antivenin has been injected

14 While desensitizing doses of antivenin are being injected in addition to a syringe containing 5 cc of 1% benadryl have ready another syringe containing 2 cc of epinephrine hydrochloride (1:1000) for use if emergency symptoms are encountered

15 Since the outcome of arachnidism is determined within the course of a few hours treatment must be persistent and unrelenting During the tedious process of desensitization an assistant continues symptomatic therapy using calcium gluconate intravenously and opiate antihistamine and neostigmine intramuscularly noting the response to each preparation and giving the largest possible doses that do not simultaneously produce toxic reactions or side effects

16 Because of rapid absorption of venom local incisions and suction have no value

17 In the event that sedation is not afforded by opiate and calcium salt give an intravenous injection of soluble barbiturate (0.5 gm of

sodium luminal) or of 20 cc of 10% magnesium sulfate. If the latter is used another syringe with 10% calcium gluconate is kept available for administration as an antidote if respiratory depression is produced by the magnesium ion.

ARSENICALS

Inorganic and organic arsenicals are available each as trivalent and pentavalent preparations.

Trivalent Inorganic Arsenicals

Of trivalent inorganic arsenicals only liquor potassii arsenicis (Fowler's solution) is used in modern clinical practice. No longer prescribed for what was vaguely called alterative action, Fowler's solution is employed currently in leukemia for leukocytic effects similar to those produced by radioactivity.

Pentavalent Inorganic Arsenicals

Of pentavalent inorganic arsenicals sodium cacodylate is the sole survivor. Cacodylate injections are used for their tonic effects. Evidence of this alleged activity appears to rest primarily on the veterinarian opinion that arsenic makes the horse's coat more sleek and silky.

Figures of cacodylate of soda retain great popularity on the continent but the boons that follow this type of arsenotherapy are more likely psychotherapeutic!

Trivalent Organic Arsenicals

Trivalent organic arsenicals notably Ehrlich's 606 were the magic bullets of the early twentieth century. They found principal employment in the treatment of treponematoses especially syphilis.

In the experiments that led to Massive Chemotherapy of Syphilis (p. 344) it became undeniably clear to all but partisans that oxophenarsine hydrochloride (mapharsen) was the organic trivalent arsenical of choice (Table 15, p. 124). Its advantages include ease of administration, small bulk of diluent (2 cc), low effectual therapeutic dose, correspondingly low relative toxicity, and high spirocheticidal activity. Since completion of Five-day Treatment it appears that the more recently introduced dichlorophenarsine hydrochloride (clorarsen) shares the virtues of mapharsen. However, neither arsenical is comparable to penicillin as a safe and effectual spirocheticide.

Pentavalent Organic Arsenicals

Pentavalent organic arsenicals may be sharing the fate of trivalent preparations. Tryparsamide once hailed for its potency in neurosyphilis and trypanosomiasis now is recognized as relatively ineffectual in the first instance and as a preparation of relatively high toxicity in

the latter as compared with more newly introduced p-arsenosophenylbutyric acid and suramin sodium (p 4553)

INORGANIC ARSENICALS

TRIVALENT

Arsenic Trioxide U S P (arsenous acid, arsenous oxide)

Parent substance of trivalent arsenical Because of toxicity abandoned as tonic and alterative

Potassium Arsenite

Use as Liquor

Liquor Potassii Arsenitis (Fowler's Solution)

Obsolete as emebicide trypanocide tonic and hematonic Use for leuko-toxic effects in leukemia (p 4262)

Solution Arsenous Acid

Obsolete

PENTAVALENT

Arsenic Acid

Parent substance of organic and inorganic pentavalent arsenicals High toxicity precludes therapeutic use

Cacodylate of Soda

Retains popularity as picture for tonic and alterative action.

Solarson

Obsolete

ORGANIC ARSENICALS

TRIVALENT

Arsenoxide

See Oxophenarsine

Arsphenamine U S P (Salvarsen, 606)

First of the reasonably non-toxic arsphenamines Because of its insolubility (25 cc for 100 mg) and its greater toxicity it has been superseded by oxophenarsine hydrochloride (mapharsen) and dichlorophenarsine hydrochloride (clorarsen)

Available Products Arsphenamine (Merck) Ampuls 0.1 0.2, 0.3 0.4 0.5 0.6 1.0 and 3.0 gm

Bismarsen

See Bismuth Arsphenamine

Bismuth Arsphenamine Sulfonate N.N.R. (Bismarsen)

A derivative of arsphenamine containing bismuth (p 118) Bismarsen can not be recommended since it combines the hazards of an arsenical with those due to bismuth. The simpler bismuth subsalicylate in oil may be given for supplementary use if there appears to be an indication for bismuth in therapeutics

Available Products Bismarsen (Abbott) Ampuls of 0.1 and 0.2 gm with ampuls of 0.25% butyn sulfate for use as diluent. For intramuscular use only

C C 914 C C 1037

See Carbarsone

Dichlorophenarsine Hydrochloride U S P (Clorarsen)

The most recently Council-accepted trivalent organic arsenical whose formula is 3-amino-4-hydroxyphenyl-dichloroarsine hydrochloride containing about 26% arsenic

Available Products Dichlorophenarsine hydrochloride (Abbott, Winthrop) Ampuls of 45 and 68 mg Clorarsen (Squibb) Ampuls 45 and 68 mg and Dichlor mapharsen (Parke Davis) Ampuls 50 and 75 mg

With oxophenarsine hydrochloride (mapharsen) clorarsen is the arsenical of choice in the treatment of syphilis On addition of as little as 2 cc of sterile distilled water solution is effected and arsenoxide is formed. Use in the manner and dosage of mapharsen.

sodium luminal) or of 20 cc of 10% magnesium sulfate. If the latter is used another syringe with 10% calcium gluconate is kept available for administration as an antidote if respiratory depression is produced by the magnesium ion.

ARSENICALS

Inorganic and organic arsenicals are available each as trivalent and pentavalent preparations.

Trivalent Inorganic Arsenicals

Of trivalent inorganic arsenicals only liquor potassii arsenitis (Fowler's solution) is used in modern clinical practice. No longer prescribed for what was vaguely called alterative action, Fowler's solution is employed currently in leukemia for leukocytic effects similar to those produced by radioactivity.

Pentavalent Inorganic Arsenicals

Of pentavalent inorganic arsenicals sodium cacodylate is the sole survivor. Cacodylate injections are used for their tonic effects. Evidence of this alleged activity appears to rest primarily on the veterinarian's opinion that arsenic makes the horse's coat more sleek and silky.

Figures of cacodylate of soda retain great popularity on the continent but the boons that follow this type of arsenotherapy are more likely psychotherapeutic!

Trivalent Organic Arsenicals

Trivalent organic arsenicals notably Ehrlich's 606 were the magic bullets of the early twentieth century. They found principal employment in the treatment of treponematoses, especially syphilis.

In the experiments that led to Massive Chemotherapy of Syphilis (p. 344) it became undeniably clear to all but partisans that oxophenarsine hydrochloride (mapharsen) was the organic trivalent arsenical of choice (Table 15, p. 124). Its advantages include ease of administration, small bulk of diluent (2 cc), low effectual therapeutic dose, correspondingly low relative toxicity, and high spirocheticidal activity. Since completion of Five Day Treatment it appears that the more recently introduced dichlorophenarsine hydrochloride (clorarsen) shares the virtues of mapharsen. However, neither arsenical is comparable to penicillin as a safe and effectual spirocheticide.

Pentavalent Organic Arsenicals

Pentavalent organic arsenicals may be sharing the fate of trivalent preparations. Tryparsamide once hailed for its potency in neurosyphilis and trypanosomiasis now is recognized as relatively ineffectual in the first instance and as a preparation of relatively high toxicity in

CC 914 CC 1037

Trivalent analogs of carbarsone (V.S.) Comparison between the two thioarsenites indicates that each is effective and there is little difference in the response to them. Except for nausea and vomiting there were no evidences of toxicity due to the drug and these manifestations were eliminated by coating with phenyl salicylate

Dose levels of from $\frac{1}{16}$ to $\frac{1}{4}$ those required for carbarsone U.S.P. are effective in human beings. Enteric coated tablets provide a useful form especially for ambulatory patients. The drugs are equally effective against motile or encysted forms and effective drug levels can be developed in the liver and tissues of the bowels where they are needed

Fournneau 270

See Tryparsamide

p-Arsenophenylbutyric Acid

An acid substitute phenyloxide for investigational use in the treatment of trypanosomiasis. Daily injections of 0.5 mg per kg of body weight for two weeks or of 1 mg per kg for one week are under current clinical trial in trypanosomiasis. Para-arsenophenylbutyric acid apparently has negligible toxicity in the doses used (p 4595)

Phenarsone Sulfoxylate N.N. (Aldarsone)

Sodium 3-amino-4-hydroxyphenylarsenate N-methanol sulfoxylate. It is a pentavalent arsenical (p 120) containing about 18% arsenic

Available Products Aldarsone (Abbott) Ampuls of 0.5 gm. and 1 gm.

Aldarsone (Abbott) Vaginal Suppositories 0.5 gm

In neurosyphilis prefer penicillin and/or mapharsen or clorarsen, in amebic dysentery carbarsone is more efficient and less toxic, in trichomonas vaginalis prefer less toxic trichomonocides

Sodium Arsanilate (Atoxyl)

An early preparation of organic pentavalent arsenical. Superseded by less toxic products.

Stovarsol

See Acetarsons

Tryparsamide (Fournneau 270)

Obsolete and dangerously toxic pentavalent organic arsenical yielding to penicillin and the less toxic arsenicals mapharsen and clorarsen in the treatment of syphilis to cloroquine and chloroquine in malaria and to suramin sodium (naphuride) in trypanosomiasis

Toxicology

The toxicology of arsenic remains unchanged (pp 122-125 Fig 16 p 123) although its threat has been significantly lessened through the introduction of BAL as an effectual antidote

Antidote

British Anti Lewisite (BAL) N.N.R. (p 4251) is especially useful in the treatment of arsenical encephalopathies (p 124) toxicoderms (Fig 16 p 123) and agranulocytoses (p 1096)

Despite the extraordinary antidotal properties of BAL arsenotherapy cannot approach penicillin as a safe modality in the treatment of syphilis and allied infections. It remains to be demonstrated whether combined arsenic and penicillin therapy will yield results sufficiently superior to those obtained with penicillin alone so that the hazard of arsenical poisoning is justified even granting the lessening risk through availability of BAL.

Mapharsen

See Oxophenarsine

Neocarsphenamine U S P (Neosalvarsan)

Virtually obsolete trivalent organic arsenical superseded by oxophenarsine hydrochloride (mapharsen) and dichlorophenarsine hydrochloride (clorarsen) in the modern treatment of syphilis (p 4554) and allied treponematoses (p 331)

Available Product Neocarsphenamine (Abbott, Merck Squibb) Ampuls 0.15, 0.3, 0.45, 0.6, 0.75, 0.9, 3.0 and 4.5 gm. Compare cumbersome technique (p 117) with simplicity of administration of mapharsen and clorarsen (p 119)

Oxophenarsine Hydrochloride U S P (Arsenoxide Mapharsen)

The preferred trivalent organic arsenical (p 119) with dichlorophenarsine hydrochloride (clorarsen) in the modern treatment of syphilis (p 345)

Available Product Mapharsen (Parke Davis) Ampuls 40 and 60 mg. For ease of administration (p 119) safety and efficiency the arsenical of choice in private practice (p 4554)

Silver Arsphenamine N N R.

Obsolete organic trivalent arsenical (p 4230) yielding to less toxic oxophenarsine hydrochloride (mapharsen) and dichlorophenarsine hydrochloride (clorarsen) in the modern treatment of syphilis

Sulfarsphenamine U S P

Obsolete trivalent organic arsenical yielding to oxophenarsine hydrochloride (mapharsen) and dichlorophenarsine hydrochloride (clorarsen) in the modern treatment of syphilis

PENTAVALENT**Acetarson N F (Stovarsol)**

3 acetylamino-4 hydroxyphenyl 1 arsenic acid containing 27% organic pentavalent arsenic

Available Products Tablets Acetarson (Abbott) 100 and 250 mg tablets stovarsol (Merck) 25, 50 and 100 mg acetarson powder for vaginal insufflation 500 mg (12.5% acetarson with equal parts of kaolin and sodium bicarbonate)

In amebic dysentery acetarson has greater toxic potential than oxyquinolines rated less desirable arsenical than carbarsone

In trichomonas vaginalis acetarson has greater toxic potential than oxyquinolines (p 4592)

Acetylarsan

A diethylamine of pentavalent acetarson (stovarsol). Superseded as antisyphilitic by organic trivalent arsenicals such as the hydrochlorides of oxophenarsine (arsenoxide mapharsen) and dichlorophenarsine (clorarsen)

Aldarson

See Phenarsone

Atoxyl

See Sodium Arsenite

Carbarsone U S P

A pentavalent arsenical (4 ureido 1 phenyl arsenic acid) containing about 28% arsenic

Available Products Carbarsone Powder (Lilly)—2 gm vial Carbarsone Tablets (Lilly)—50 and 250 mg Carbarsone Suppositories (Lilly) 130 mg Carbarsone Pulvules (Lilly)—250 mg

In amebic dysentery carbarsone is the choice of pentavalent arsenicals. However detoxification of carbarsone oxide by sulfhydryl groups has produced at least two thioarsenites presently referred to as C C 914 and C C 1037 which appear more effective and less toxic. If original findings are sustained these trivalent analogs may replace carbarsone as an amebicide (p 4182)

CC 914 CC 1037

Trivalent analogs of carbarsone (V.S.) Comparison between the two thioarsenites indicates that each is effective and there is little difference in the response to them. Except for nausea and vomiting there were no evidences of toxicity due to the drug and these manifestations were eliminated by coating with phenyl salicylate.

Dose levels of from $\frac{1}{2}$ to $\frac{1}{4}$ those required for carbarsone U.S.P. are effective in human beings. Enteric coated tablets provide a useful form, especially for ambulatory patients. The drugs are equally effective against motile or encysted forms and effective drug levels can be developed in the liver and tissues of the bowels where they are needed.

Fournneau 270

See Tryparsamide

p-Arsenophenylbutyric Acid

An acid substitute phenyloxide for investigational use in the treatment of trypanosomiasis. Daily injections of 0.5 mg per kg of body weight for two weeks or of 1 mg per kg for one week are under current clinical trial in trypanosomiasis. Para-arsenophenylbutyric acid apparently has negligible toxicity in the doses used (p 4595).

Phenarsone Sulfoxylate N.N.R. (Aldarsone)

Sodium 3-amino-4-hydroxyphenylarsonate N-methanol sulfoxylate. It is a pentavalent arsenical (p 120) containing about 18% arsenic.

Available Products: Aldarsone (Abbott) Ampuls of 0.5 gm. and 1 gm., Aldarsone (Abbott) Vaginal Suppositories 0.5 gm.

In neurosyphilis prefer penicillin and/or mapharsen or clorarsen, in amebic dysentery carbarsone is more efficient and less toxic; in trichomonas vaginalis prefer less toxic trichomonocides.

Sodium Arsanilate (Atoxyl)

An early preparation of organic pentavalent arsenical. Superseded by less toxic products.

Stovarsol

See Acetarsone

Tryparsamide (Fournneau 270)

Obsolete and dangerously toxic pentavalent organic arsenical yielding to penicillin and the less toxic arsenicals mapharsen and clorarsen in the treatment of syphilis; to cloroquine and chloroquine in malaria; and to suramin sodium (naphuride) in trypanosomiasis.

Toxicology

The toxicology of arsenic remains unchanged (pp 122-125 Fig 16 p 123) although its threat has been significantly lessened through the introduction of BAL as an effectual antidote.

Antidote

British Anti Lewisite (BAL) N.N.R. (p 4251) is especially useful in the treatment of arsenical encephalopathies (p 124) toxicoderms (Fig 16 p 123) and agranulocytoses (p 1096).

Despite the extraordinary antidotal properties of BAL, arsenotherapy cannot approach penicillin as a safe modality in the treatment of syphilis and allied infections. It remains to be demonstrated whether combined arsenic and penicillin therapy will yield results sufficiently superior to those obtained with penicillin alone so that the hazard of arsenical poisoning is justified even granting the lessening risk through availability of BAL.

Mapharsen

See Oxophenarsine

Neocarsphenamine U S P (Neosalvarsan)

Virtually obsolete trivalent organic arsenical superseded by oxophenarsine hydrochloride (mapharsen) and dichlorophenarsine hydrochloride (clorarsen) in the modern treatment of syphilis (p 4554) and allied treponematoses (p 331)

Available Product Neocarsphenamine (Abbott Merck Squibb) Ampuls 0.15 0.3 0.45 0.6 0.75 0.9 3.0 and 4.5 gm Compare cumbersome technique (p 117) with simplicity of administration of mapharsen and clorarsen (p 119)

Oxophenarsine Hydrochloride U S P (Arsenoxide Mapharsen)

The preferred trivalent organic arsenical (p 119) with dichlorophenarsine hydrochloride (clorarsen) in the modern treatment of syphilis (p 345)

Available Product Mapharsen (Parke Davis) Ampuls 40 and 80 mg For ease of administration (p 119) safety and efficiency the arsenical of choice in private practice (p 4554)

Silver Arsenphenamine N N R

Obsolete organic trivalent arsenical (p 4230) yielding to less toxic oxophenarsine hydrochloride (mapharsen) and dichlorophenarsine hydrochloride (clorarsen) in the modern treatment of syphilis

Sulfarsphenamine U S P

Obsolete trivalent organic arsenical yielding to oxophenarsine hydrochloride (mapharsen) and dichlorophenarsine hydrochloride (clorarsen) in the modern treatment of syphilis

PENTAVALENT**Acetarsone N F (Stovarsol)**

3 acetylamino-4 hydroxyphenyl 1 arsenic acid containing 27% organic pentavalent arsenic

Available Products Tablets Acetarsone (Abbott) 100 and 250 mg tablets stovarsol (Merck) 25 50 and 100 mg acetarsone powder for vaginal insufflation 500 mg (12.5% acetarsone with equal parts of kaolin and sodium bicarbonate)

In amebic dysentery acetarsone has greater toxic potential than oxyquinolines rated less desirable arsenical than carbarsone

In trichomonas vaginalis acetarsone has greater toxic potential than oxyquinolines (p 4592)

Acetylarsen

A diethylamine of pentavalent acetarsone (tovarsol) Superseded as antisyphilitic by organic trivalent arsenicals such as the hydrochlorides of oxophenarsine (arsenoxide mapharsen) and dichlorophenarsine (clorarsen)

Aldarsone

See Phenarsone

Atoxy!

See Sodium Arsenilate

Carbarsone U S P

A pentavalent arsenical (4 ureido 1 phenyl arsonic acid) containing about 28% arsenic

Available Products Carbarsone Powder (Lilly)—2 gm vial Carbarsone Tablets (Lilly)—50 and 250 mg Carbarsone Suppositories (Lilly) 130 mg Carbarsone Pulvules (Lilly)—250 mg

In amebic dysentery carbarsone is the choice of pentavalent arsenicals. However detoxification of carbarsone oxide by sulphydryl groups has produced at least two thiocarbenites presently referred to as C C 914 and C C 1037 which appear more effective and less toxic. If original findings are sustained, these trivalent analogs may replace carbarsone as an amebicide (p 4182)

AMINO ACIDS AND PROTEIN HYDROLYSATES FOR ORAL AND TUBE FEEDING

| Product and Manufacturer | Comment |
|---|--|
| Amigen (Mead) N N R | For oral or tube feeding make 10-40% solution with water or fruit juice |
| Aminocids (Arlington) | One ounce (30 gm) provides approximately 12 gm protein hydrolysate and 12 gm carbohydrate to yield 100 calories |
| Caseo (Mead) | Milk protein 88% fat 2% minerals 4.5% Each ounce yields 105 calories |
| Casein Hydrolysate (Squibb) | From enzymatic digestion of casein (85% protein) As Caseo |
| Choline Chloride (Abbott, Upjohn) | Amino acid preparation. Each ounce yields 4 gm. choline chloride Lipotropic principle reverses fatty infiltration of liver and protects hepatic cells. |
| Choline Dihydrogen Citrate (Parke Davis) | Tablets 0.65 gm As choline chloride Give 4 tablets daily with fluid. |
| Delcos (Sharp & Dohme) | Palatable milk derivative Give 100 gm daily (50 gm protein and 30 gm carbohydrate) |
| Essenamline (Winthrop) | Lactalbumin hydrolysate As Caseo |
| Lednac (Lederle) | Liver protein hydrolysate with 38% maltose and vitamin and mineral supplements (chocolate flavored) One ounce yields 100 calories |
| Lonalac (Mead) | A low sodium food containing 38% lactose 28% milk fat and 27% casein with minerals and added B vitamin Supplies 500 calories per 100 gm. |
| Meonine (Wyeth) | Tablets 0.5 gm Lipotropic amino acid as choline above Give 6 to 12 tablets daily with high protein high vitamin diet. |
| Methionine D (Abbott, National, Squibb etc) | Tablets 0.5 gm. as meonine above |
| Nutragest (Burroughs Wellcome) | Hydrolysates of casein, lactalbumin and yeast with 48.5% added carbohydrate vitamins and minerals |
| Protenum (Mead) | High protein, low fat food with 46% carbohydrate 42% protein, 7% minerals 3% moisture and only 2% fat. The energy yield of 100 gm is 370 calories |
| Protolysate (Mead) N N R | Casein hydrolysate One ounce yields nitrogen equivalent of 25 gm protein |

Oral Feeding

Protein hydrolysates may be taken in water milk tomato or other vegetable juice or in a plain soup or bouillon Chilling the mixture by addition of chipped or crushed ice improves its palatability for many patients The method of preparation is simple

- 1 Pour required amount of fluid into a suitable vessel
- 2 Sprinkle prescribed amount of protolysate on surface Stir with fork or egg beater until powder is well dissolved
- 3 Add other ingredients

ARTIFICIAL FEEDING

Under certain circumstances usually trying patients cannot or will not maintain nutritive requirements by normal ingestion of fluids and foods. Recourse must then be had to intragastric or transduodenal tube feedings or to intravenous infusions. Commercial availability of amino acid and protein hydrolysates has greatly improved methods of artificial feeding.

AMINO ACIDS

Indispensable amino acids include those which the body is unable to synthesize, i.e. phenylalanine, tryptophane, methionine, lysine, leucine, isoleucine, threonine, valine, histidine, and arginine. The daily requirement of each individual amino acid varies between 0.3 and 5 gm, ordinarily met on a diet that contains 70 gm of protein.

Indications for use of individual amino acids include administration of glycine in myasthenia gravis (p. 2882), histidine for peptic ulcer (p. 1790) and methionine, lysine, and choline for lipotropic activity in cirrhosis of the liver (p. 1969). Despite enthusiastic claims, there is no evidence that prescription of pure amino acids accomplishes anything that cannot be accomplished by proper use of naturally occurring dietary proteins. The latter are more easily available and considerably less expensive.

PROTEIN HYDROLYSATES

Whereas the Council of the American Medical Association has not given its stamp of approval to any preparation of individual amino acid, it has sanctioned several protein hydrolysates prepared by various methods of artificial digestion. These provide adequate amounts of essential amino acids or of polypeptides yielding these essentials. Protein hydrolysates are available in powder form for oral administration or duodenal tube feeding and in sterile, non-pyrogenic, non-antigenic solutions for intravenous infusion.

For ease of administration, economy and safety, oral or duodenal feedings are preferred to parenteral injection. The products listed below are commercially available and resemble one another in that they supply protein hydrolysate. Most are milk protein derivatives though ledinac is of hepatic origin and nutragest is partially derived from yeast. Some (aminoids, delcos, ledinac, nutragest) have added carbohydrate; others (ledinac, nutragest) have vitamin and mineral supplements. For the most part, the practitioner may disregard these chemical differences in favor of palatability, as determined by the individual taste of the individual patient. Certainly several products should be tested before renouncing oral or tube feedings in favor of parenteral injection.

5 Warm formula to body temperature before feeding (This warming period will melt the cream which rises to the top during the refrigeration period)

PROTOLYSATE DOSAGE FOR VARIOUS PROTEIN REQUIREMENTS TUBE FEEDING

| Weight of Patient Lb | Normal Protein Allowance gm | Mild Protein Depletion | Moderate Protein Depletion |
|-------------------------|--------------------------------|--|--|
| | | Dosage of protolysate per day which will furnish 50% of amount of protein normally allowed | Dose of protolysate which will furnish entire amount of protein normally allowed |
| 110 | 50 | 4 level tbsps protolysate and 3 level tbsps dextrose in 9 ounces of water | 8 level tbsps protolysate and 6 level tbsps dextrose in 18 ounces of water |
| 132 | 60 | 5 level tbsps protolysate and 4 level tbsps dextrose in 12 ounces of water | 10 level tbsps protolysate and 8 level tbsps dextrose in 24 ounces of water |
| 154 | 70 | 6 level tbsps protolysate and 5 level tbsps dextrose in 14 ounces of water | 12 level tbsps protolysate and 10 level tbsps dextrose in 27 ounces of water |
| 176 | 80 | 6½ level tbsps protolysate and 5 level tbsps dextrose in 15 ounces of water | 13 level tbsps protolysate and 10 level tbsps dextrose in 30 ounces of water |
| 198 | 90 | 7½ level tbsps protolysate and 6 level tbsps dextrose in 17 ounces of water | 15 level tbsps protolysate and 12 level tbsps dextrose in 34 ounces of water |
| 220 | 100 | 8 level tbsps protolysate and 6½ level tbsps dextrose in 18 ounces of water | 16 level tbsps protolysate and 13 level tbsps dextrose in 37 ounces of water |

These solutions furnish the equivalent of approximately 22 gm of protein and 20 calories to the ounce and represent approximate concentrations of 10% dextrose and 10% protolysate

Intravenous Infusions

The Council on Pharmacy and Chemistry of the American Medical Association has accepted several products for intravenous infusion of protein hydrolysate. Thus far the stamp of approval has been given to no pure preparation of essential amino acid on the ground that hydrolyates yield building blocks indispensable to protein synthesis.

Council requirements for accepted products include the following:

- 1 Of the total nitrogen present 50% or more must be in the form of alpha amino nitrogen
- 2 Sufficient hydrolysis must be accomplished to reduce the non antigenicity of products for oral and intravenous use
- 3 Intravenous products must be sterile and free from pyrogens
- 4 Added carbohydrate is permissible
- 5 Added vitamins, minerals, etc. are not considered presently acceptable

Indications Indications for parenteral injection of protein hydrolysate include correction of hypoproteinemia and maintenance of a positive nitrogen balance particularly when there is interference with ingestion, digestion or absorption of food.

4 After preparation of protolysate solution or recipe keep in refrigerator until ready for use. Observe same precautions in handling and storage as for other perishable foods such as milk.

TYPICAL RECIPES

Tomato Juice Cocktail

| | |
|--------------|--------------------------------|
| Protolysate | 3 level tablespoonfuls |
| Tomato Juice | $\frac{3}{4}$ measuring cupful |

Mix and serve cold. This recipe furnishes the equivalent of about 18 gm. of protein.

Tomato Soup

| | |
|--------------------|------------------------------|
| Protolysate | 1½ level tablespoonfuls |
| Canned Tomato Soup | ½ average (10 to 11 oz.) can |
| Water | 4 tablespoonfuls |

Mix and heat. Serve hot. This recipe furnishes the equivalent of about 11 gm. of protein.

Jellied Consomme

| | |
|-----------------|--------------------------------|
| Protolysate | 4 level tablespoonfuls |
| Canned Consomme | 1 average (10 to 11 oz.) can |
| Water | $\frac{1}{3}$ measuring cupful |
| Plain Gelatin | ½ level tablespoonful |

Add gelatin to water (cool). Heat over a slow flame with constant stirring or over boiling water until gelatin is dissolved. Stir gelatin solution into consomme. Add protolysate and stir until dissolved. Pour into 4 custard cups. Chill in refrigerator. This recipe furnishes the equivalent of about 45 gm. of protein or 11 gm. per serving.

Tube Feeding

Administration of protolysate by tube is frequently prescribed when the patient is unable to take sufficient food by mouth (p. 4235). In the unconscious patient the danger of aspiration makes the method somewhat hazardous. The tube is usually introduced by the nasal route and may be placed in stomach or duodenum. The material to be inserted through the tube should be warmed to body temperature before administration. The tube is left in place and regular feedings up to 7 fluid ounces in volume may be administered at two to four hour intervals. Night tube feedings supplement dietary intake of food during the day.

Tube feedings are contraindicated when esophageal varices are present as in cirrhosis of the liver.

Jejunostomy Feeding

A mixture suitable for jejunostomy feeding yielding the equivalent of 195 gm. protein, 258 gm. carbohydrate, 48 gm. fat and 2170 calories is prepared by adding 2 measuring cupfuls of protolysate, 2 measuring cupfuls of dextrin maltose and 1 measuring cupful of cream (20%) to 1 quart of water.

- 1 Place protolysate and dextrin maltose in a mixing bowl.
- 2 Add warm water and stir until powders are dissolved.
- 3 Add cream. Mix thoroughly.
- 4 Boil formula for one minute. Cool and store in refrigerator.

FLUIDS FOR INTRAVENOUS INFUSIONS (p 3775) (Continued)

| Preparation | Comment |
|--|--|
| Lactate Ringer's (NaCl 0.31 KCl 0.03 CaCl 0.02 and Na lactate 0.31) | Combines efficacy of lactate and three chlorides Use to correct electrolyte imbalance dehydration, acidosis potassium deficiency etc |
| METABOLITES | |
| Dextrose (Glucose) 2½% 5% or 10% | For calorogenic requirements (1000 cc 2½% = 100 cal 1000 cc 5% = 200 cal. 1000 cc 10% = 400 cal) To combat acidosis Add insulin 1 unit per gm in diabetic acidosis Use dis- tilled water saline Ringer's or lactate as vehicle according to indications above |
| Water Soluble Vitamins | With dextrose add thiamine 10 to 50 mg riboflavin 5 mg niacinamide 50 mg per liter Add 100 mg ascorbic acid postoperatively with 5 to 10 mg K if there is jaundice bleeding hemorrhagic diathesis or hepatic insufficiency |
| Alcohol 5% or 10% with Dextrose 5% | Especially in alcoholism but also in non alcoholics for same indications as dextrose alone One liter 5% alco- hol with 5% dextrose yields 600 calories One liter 10% alcohol with 5% dextrose yields 1000 calories Addi- tional sedative effect in maniacal psychoses analgesic in painful conditions and soporific Inject slowly with constant observation Do not combine with opiate or barbiturate |
| Dextran (6%) in physiologic saline | Polysaccharide plasma substitute Use 400 to 3000 cc in forward failure (shock) hypoproteinemia hypoten- sion etc Dextran probably metabolized and burned as glucose Not yet commercially available |
| PROTEIN HYDROLYSATES | |
| Amigen (Mead) N.N.R. with 5% dextrose (Bottles of 125 and 500 cc) | Non antigenic pancreatic hydrolysate of casein (1.3 gm equivalent of 1 gm protein) To maintain nitrogen bal- ance correct hypoproteinemia and protect liver give 1000-3000 cc daily |
| Aminosol (Abbott) with 5% dextrose (Container 1000 cc) | Hydrolysate of beef or pork blood fibrin Contains arginine histidine lysine tryptophane phenylalanine cystine methionine threonine leucine isoleucine valine glutamic acid and 6% ash |
| Elamine Lyophilized (Interchem) N.N.R. 60 gm. with diluent | Acid hydrolysate of casein Contains amino acids as above but neither dextrose nor sodium chloride Non pyrogenic with pH range 6.5 to 7.0 Just prior to use restore to volume of 600 cc with diluent |
| Parenamline (Winthrop) N.N.R. 100 cc vials (15%) 1000 cc flask (6%) | Acid hydrolysate of casein As elamine above but sup- plied in 6% solution for injection or 15% solution to be diluted with three parts of diluent. |
| Protein Hydrolysate (Baxter) 5% N.N.R. Containers 500 and 1000 cc | Enzymatic digest of casein containing amino acids and peptides with or without 5% dextrose |

Hypoproteinemia or protein deficiency may result from a decreased dietary intake (famine poverty obstruction of gastro intestinal tract repeated vomiting) decreased absorption of protein (diarrhea ulcerative disease of intestine absence of pancreatic juice absence of bile fistulization) decreased formation of blood protein due to disease of liver (cirrhosis and other forms of hepatic insufficiency) increased loss of protein (albuminuria burns hemorrhage excessive vomiting diarrhea drainage from artificial openings and fistulas) and increased requirements for protein (fever pregnancy leukemia and hyperthyroidism)

Hypoproteinemia may result in peripheral edema diminished intestinal motility intestinal distention delayed wound healing diminution of liver function increased susceptibility to infection anemia and increased tendency to thrombosis and embolism

Ordinarily the patient with hypoproteinemia responds to a mixed high protein diet using 125 to 300 gm of protein daily Concentrates and hydrolysates should not be employed unless ordinary foodstuffs cannot be ingested absorbed and digested

Untoward Reactions The practitioner is cautioned to avoid intravenous infusion of protein hydrolysate if the product can be given orally or by tube feeding since injections may produce untoward effects including nausea vomiting hyperpyrexia vasodilatation abdominal pain convulsions edema and phlebitis or thromboses at the site of injection Cloudy solutions must be discarded and unopened solutions must be stored in a cool place Once opened the solution must be used within the course of a very few hours Infusions must be started at an exceedingly slow rate (30 drops to the minute) and should not be speeded if it is at all possible and convenient If the patient becomes restless it is justifiable to give sedatives concurrently

FLUIDS FOR INTRAVENOUS INFUSIONS (p 3775)

| Preparation | Comment |
|--|---|
| DILUENT | |
| Distilled Water | Substitute for saline in presence of backward failure edema and sodium or chloride intoxication |
| Sodium Chloride Physiologic Isotonic Solution (0.9%) | Use as vehicle in dehydration especially associated with vomiting and sodium or chloride loss |
| Ringer's Solution (Isotonic Solution of Three Chlorides) | Contains 0.86% NaCl 0.03% KCl and 0.033 CaCl ₂ Use as vehicle in dehydration especially with loss of base as in diarrheas fistulas drainage potassium deficiency of diabetic acidosis etc |
| Sodium Lactate (M/6 Solution) | Contains 1.87 Na lactate Use especially in forward failure (p 920) acidosis and hemo-concentration to increase volume of circulating fluid Calculate that 500 cc for average adult of 150 lbs (70 kg) increases plasma Na 14 millimols per liter corresponding to rise in bicarbonate concentration sufficient to yield 33 vol umes CO ₂ per 100 cc plasma |

tetrachlorethylene are swallowed Two hours later saline is repeated Food is resumed after thorough evacuation Repetition of the anthelmintic is permissible in three weeks if necessary

3 If ascariasis persists despite the use of the above mentioned anthelmintics it may be necessary to give oil of chenopodium (p 1896) The routine for tetrachlorethylene is repeated On the morning of treatment in place of tetrachlorethylene 0.6 to 0.9 cc of oil of chenopodium is washed down with a glass of milk The dose of oil of chenopodium is repeated once or twice at half hour intervals until a total of no less than 1.2 cc and no more than 2.7 cc has been ingested Two hours after the last dose the saline is repeated

4 As a last resort in resistant ascariasis santonin is employed (pp 1896 1898) Three capsules each containing 60 mg of santonin (total 180 mg) are given once daily for two or three consecutive days With each dose a saline laxative is simultaneously administered preferably after breakfast

ASPERGILLOSIS

Principles of Diagnosis and Treatment

1 Despite their wide dissemination in nature *Aspergilli* infrequently produce clinical manifestations (p 498)

2 The diagnosis of aspergillosis rests on isolation of the fungus from a lesion since there are no pathognomonic clinical manifestations For guidance in therapy the organism must be subcultured and tested against various antibiotics to determine individual sensitivity

3 The few reported infections with *aspergilli* have been limited to cutaneous inflammations Only with exceeding rarity are manifestations systemic usually predominantly pulmonary (Fig 506 p 2213)

4 Since there is no specific therapeutic agent the clinician who encounters the rare case of systemic aspergillosis is justified in treating the invasion in the manner of actinomycosis (p 4141)

AUREOMYCIN

Aureomycin is a yellow crystalline antibiotic derived from *Streptomyces aureofaciens* Its wide antibiotic spectrum and virtual absence of toxicity mark its discovery as another epochal contribution to anti-infective therapy (p 4219)

Available Products

Aureomycin Hydrochloride N N R (Duomycin Lederle) Capsules 50 and 250 mg Prescribe 25 to 100 mg per kilogram per day (1.75 to 7 gm for average adult weighing 150 pounds)

ASCARIASIS

[Poundworm Infestation]

Principles of Diagnosis and Treatment

Infestations with the roundworm may be limited to invasions of the intestinal tract (ascariasis) or they may involve extra intestinal dissemination throughout the tissues of the body

Extra intestinal invasions are separately considered under the headings of filariasis (p 4328) and trichinosis (p 4591) The present concern is management of *intra intestinal infestations* (Figs 433 p 1894 and Fig 439 p 1906) which however may penetrate the intestinal barrier and produce evidences of an atypical pneumonitis Hyper sensitivity phenomena in the nature of eosinophilic pneumonitis (Loeffler's syndrome) also have been reported

Practical Management

Immediate Care

1 With mixed infestations especially uncinariasis (hookworm) treat ascariasis first and then proceed to elimination of the smaller worm

2 Use hexylresorcinol (caprokol) crystoids (p 4356) as anthelmintic of choice Order a saline the evening preceding use of the specific The next morning before breakfast give the adult a single dose of 1 gm (5 hard gelatin capsules each containing 0.2 gm) The capsules must be swallowed whole without chewing After five hours repeat the saline Later the patient may resume normal diet

3 Repeat hexylresorcinol after three days if stools have not cleared Supplement oral doses by retention enemas of 200 cc of 1:1000 hexylresorcinol in warm tap water

4 In regions in which leche de higueron is available as a fresh preparation give a saline cathartic the evening preceding use of the anthelmintic The following morning order a single oral dose of 60 cc of freshly prepared leche in milk Two hours later repeat the saline

Continuing Care (Unfavorable Course)

1 Should hexylresorcinol fail try hetrazan (p 4198) Order about 1 mg per pound of body weight or approximately 140 mg for the average adult weighing 150 pounds Three doses each of three 50 mg tablets are given at 8 hour intervals Two hours after the third dose a saline is administered If stools have not completely cleared repeat hetrazan after ten days

2 With persistent ascariasis despite repeated use of less toxic anthelmintics resort to more toxic preparations Of these least objectionable is tetrachlorethylene (p 1895) For a week preceding administration of tetrachlorethylene patient is placed on a full diet avoiding fats and alcohol On the night preceding treatment a saline purge is ordered Next morning before food is taken three 1 cc capsules of

Therapeutics

The anti infective capacities of aureomycin and chloramphenicol are so closely parallel that the therapeutic uses of both antibiotics are considered in a single table together with those for terramycin

THERAPEUTICS OF AUREOMYCIN CHLORAMPHENICOL AND TERRAMYCIN

GRAM POSITIVE COCCI

Pneumococci

Despite sensitivity of pneumococcus prefer penicillin unless clinical course suggests a virus pneumonia In the latter circumstance supplement or substitute aureomycin or chloramphenicol

Staphylococci

Penicillin first choice but supplement with or substitute aureomycin or chloramphenicol if patient is sensitive or organism is penicillin resistant Combine penicillin and aureomycin or chloramphenicol in severe persistent and recurrent infections Reserve sulfonamide and streptomycin until thorough trial of less toxic antibiotics

Streptococci

Penicillin first choice although most streptococci are sensitive to aureomycin and chloramphenicol Prepare to supplement with or substitute either of latter if patient is sensitive or organism is resistant Alpha hemolytic streptococci certain strains of beta hemolytic streptococci non hemolytic streptococci group D and *Streptococcus fecalis* often more sensitive to aureomycin than penicillin Reserve sulfonamide until thorough trial of less toxic antibiotics

GRAM NEGATIVE COCCI

Gonococci

Although organism is somewhat aureomycin sensitive prefer penicillin as preparation of choice

Meningococci

Although meningococci are aureomycin sensitive prefer sulfonamide and penicillin because of greater experience with these preparations Be prepared to supplement with or substitute aureomycin if patient is intolerant of penicillin or sulfonamide or if infection is fulminating and persistent

GRAM POSITIVE BACILLI

B anthrax

Place main reliance on serum with supplementation of penicillin and streptomycin although organism is somewhat sensitive to aureomycin and chloramphenicol Prepare to supplement with or substitute latter if patient is sensitive infection is fulminating or persistent

Cd diphtheriae

Organism somewhat aureomycin sensitive Because of greater experience place main reliance on serum and penicillin Prepare to supplement with or substitute aureomycin if patient is sensitive or infection is fulminating or protracted

GRAM NEGATIVE BACILLI

Aerobacter aerogenes

Alcaligenes fecalis

Aureomycin and chloramphenicol first choice Retain streptomycin/sulfonamide as alternatives if patient is sensitive to newer preparations or if organism appears resistant

B funduliformis

Successful clinical result in a single infection

E coli

Aureomycin first choice with chloramphenicol in urinary and peritoneal infections Combine with streptomycin and/or sulfonamides if organism is resistant or infection is fulminating or protracted

Aureomycin Spersoids (Lederle) Each rounded teaspoon contains 50 mg in chocolate flavored powder. Mix with water or milk for palatable drink especially for children. One teaspoonful for each 5 pounds of body weight per day approximates 25 mg per kilogram.

Aureomycin Hydrochloride NMR (Lederle) Intravenous 50 and 100 mg vials with 10 cc vials of 2.6% leucine or 0.75% sodium carbonate for use as diluent. Reserve for use only in gastric intolerance. Inject intravenously immediately after preparation of solution. Use one fifth calculated oral dose (5 to 20 mg per kilogram or 0.35-1.4 gm daily for average adult weighing 150 pounds).

Aureomycin Hydrochloride Ophthalmic Vials (Lederle) 25 mg with dropper assembly for preparation of borate solution with 5 cc of diluent. For local use in milder infections. Combine with systemic doses in more serious infections.

Aureomycin Hydrochloride Ointment (Lederle) (3%) in petrolatum wool fat base.

Aureomycin Hydrochloride Troches (Lederle) 15 mg for prevention and treatment of mixed infections of mucosa of mouth, oropharynx and upper respiratory tract.

Bacterial Spectrum

The bacterial spectrum of aureomycin covers gram negative cocci, gram positive cocci, gram negative bacilli, gram positive bacilli, spirochetes, rickettsia, viruses and protozoa. It is broader than that of penicillin or streptomycin. In point of fact it exhibits some degree of activity against most organisms that respond to either of these potent anti-infective agents. Spectrums of chloramphenicol and terramycin parallel that of aureomycin, the principal differences being merely quantitative (p 4243).

Pharmacology

Highest blood levels are obtained two hours after oral doses of aureomycin and detectable levels are maintained for another twelve hours. Aureomycin appears in urine one hour after oral doses and excretion continues from six to twelve hours. Quantitative recovery of aureomycin is not accomplished in urine so that some is retained by or destroyed in the body. Aureomycin is demonstrable in cerebrospinal fluid in therapeutically effective levels in six hours. In bile levels are approximately 10 times those of serum. Aureomycin traverses the placental circulation and therefore it is available to the fetus.

Aureomycin deteriorates quite rapidly in solution and parenteral injections are painful. Hence it is best given by mouth. When administered to the human in oral doses of 500 mg (2 capsules) twice daily, concentrations in blood reach 0.6 to 2.4 micrograms per milliliter in an hour. In urine concentrations of 50 to 80 micrograms per milliliter are observed shortly after detectable blood levels have been attained. The urine may turn greenish yellow during excretion of aureomycin.

THERAPEUTICS OF AUREOMYCIN CHLORAMPHENICOL AND TERRAMYCIN (Continued)

RICKETTSIAE (Continued)

Reserve PABA for rare instance of organism fastness or fulminating and persistent invasion

VIRUSES

Common Cold

Aureomycin or chloramphenicol merit trial together with antihistamines

Dengue

Despite low morbidity aureomycin and chloramphenicol merit trial

Epidemic keratoconjunctivitis

Aureomycin merits trial by local instillation and oral administration.

Foot and mouth disease

Aureomycin and chloramphenicol merit trial, by analogy

Granuloma inguinale

Aureomycin and chloramphenicol specific. Despite success of streptomycin/sulfonamide more recently introduced antibiotics preferred because of greater ease of administration and lesser toxicity

Herpes zoster

Specific result with chloramphenicol

Inclusion conjunctivitis

Aureomycin specific by local instillation and oral administration.

Infectious mononucleosis

Despite inconsistent results aureomycin and chloramphenicol merit trial

Lymphopathia venereum

Aureomycin and chloramphenicol specific

Measles

Aureomycin and chloramphenicol merit trial

Molluscum contagiosum

Aureomycin and chloramphenicol merit trial

Ornithosis

Aureomycin and chloramphenicol apparently specific

Pattison's

Aureomycin and chloramphenicol apparently specific

Rabies

Place main reliance on rabies vaccine or hyperimmune serum, but aureomycin and chloramphenicol merit trial or at least, supplementation.

Trachoma

Aureomycin probably specific Use by local instillation and oral administration

Vaccinia, Variola

Successful use in eczema vaccinatum suggests possible efficacy in variola

Virus hepatitis

Aureomycin and chloramphenicol merit trial in conjunction with gamma globulin

Virus pneumonitis

Aureomycin and chloramphenicol apparently specific

AMEBAS AND PROTOZOA

E. histolytica (amebiasis)

Unexpectedly favorable clinical report warrants initial trial of aureomycin in combination with non-toxic oxyquinolines

Trichomonas hominis

Unexpectedly favorable result in chronic *Trichomonas enterocolitis*

Gardia

Responds as amebiasis

Surgical Indications

Aureomycin is particularly valuable in surgery of digestive and urinary tracts gallbladder and biliary passages

THERAPEUTICS OF AUREOMYCIN CHLORAMPHENICOL AND TERRAMYCIN

(Continued)

GRAM NEGATIVE BACILLI (Continued)

■ typhosa

Prefer chloramphenicol to aureomycin. Prepare to supplement with latter if infection is fulminating, protracted or recurrent.

H ducrey (chancroid)

Aureomycin and chloramphenicol first choices despite previous excellent results with more toxic streptomycin and sulfonamide.

■ influenzae

Despite excellent results in meningitis with combined streptomycin-sulfonamide-antiserum, aureomycin and chloramphenicol are remarkably effective and may be substituted with greater experience particularly if patient shows sensitivity to more toxic antibiotic and antiserum.

■ Fock Weeks

Specific responses to local instillations of aureomycin.

H pertussis

Aureomycin first choice with chloramphenicol. Combine with streptomycin, if needed. Polymyxin and neomycin also efficacious but much more toxic.

K pneumoniae (Friedlander)

Aureomycin first choice with chloramphenicol. Retain streptomycin-sulfonamide as alternatives if patient is sensitive to newer preparations or infection is fulminating or persistent.

M mallei (glanders)

Aureomycin and chloramphenicol meritorious.

M melitensis (brucellosis)

Aureomycin first choice with chloramphenicol. Keep streptomycin-sulfonamide for alternative if infection is persistent or fulminating. In acute brucellosis give 2.4 to 3 gm orally for at least two weeks.

M tuberculosis

Of no value in the treatment of tuberculosis despite its tubercle sensitivity of many organisms (E. H. Long).

P pestis (plague)

Despite excellent results with streptomycin-sulfonamide, aureomycin and chloramphenicol may replace more toxic antibiotic when greater experience has been obtained.

P tularensis (tularemia)

Aureomycin first choice. Reserve chloramphenicol if patient shows sensitivity or organism is resistant.

Salmonellae (paratyphoid)

Prefer chloramphenicol in typhoid fever.

Shigellae (bacillary dysentery)

Prefer chloramphenicol to aureomycin as in typhoid fever. Reserve sulfonamide for supplementation or substitution if necessary.

Vibrio comma (cholera)

Organism sensitive to aureomycin and chloramphenicol. With greater experience either or both may replace potentially more toxic sulfonamide.

D Morax Axenfeld

Response to local instillation with aureomycin.

TREPONEMES (spirochetes borrelia leptospira)

Despite moderate efficacy in syphilis (Treponema pallidum) and relapsing fever (Borrelia recurrentis) retain penicillin and arsenic as preparations of choice. Consider aureomycin in rare instance of patient sensitivity to penicillin or arsenic and in treatment of serum fast. Local applications and troches meritorious in fusospirochetosis (Vincent's infection).

RICKETTSIAE

Aureomycin and chloramphenicol unqualified preparations of choice. Use either or both, depending on patient sensitivity and organism resistance.

tated patients with chronic disease must be ambulated as soon as is possible

Combined Antibiotic Therapy

Combined antibiotic therapy using aureomycin or chloramphenicol with penicillin permits the clinician to employ anti infective therapy for prophylaxis or cure with broadest coverage of the bacterial spectrum and almost minimum risk of toxicity

Exemplifying this in a program of venereal prophylaxis ingestion of 2 tablets each of 250 000 units of penicillin together with 4 capsules of aureomycin taken within a few hours after exposure may provide effectual prophylaxis against gonorrhea chancroid granuloma inguinale lymphopathia venereum and syphilis

Illustrative of curative potentialities of combined antibiotic therapy the practitioner confronted with a pneumonitis may observe a lysis of temperature and detoxification whether the patient is suffering from pneumococcal or viral pulmonary infection

Aureomycin Versus Chloramphenicol and Terramycin

The choice between aureomycin and chloramphenicol involves hair splitting If there is any doubt as to which to prescribe it is suggested that each product be ordered in half strength in the manner that has proven so satisfactory with sulfonamide derivatives Terramycin appears equally effective and somewhat less expensive

BACILLOMYCIN

An antibiotic derived from *B subtilis* Bacillomycin lacks antibacterial action but attacks many pathogenic fungi

Available Products

Bacillomycin is not yet commercially available

Therapeutics

Experimentally bacillomycin has been used in the treatment of histoplasmosis Intramuscular injections of 50 mg given every six hours however caused local pain and slough with temperatures as high as 104 F

BACITRACIN

An antibiotic prepared from cultures of *B subtilis* Systemic administration of bacitracin is not advised since the preparation is nephrotoxic when given parenterally

In surgery of the bowel oral doses (approximating 500 mg daily) reduce pathogenic bacteria of the intestinal tract more rapidly and seemingly as efficiently as insoluble sulfonamide while permitting resection of small and large bowel lesions with greater safety (Strax and Wright 1949) As a result the over all mortality of acute peritonitis is reduced by one half as compared with a series treated with penicillin sulfadiazine and streptomycin Equally encouraging results are reported by these same authors in idiopathic ulcerative colitis regional ileitis post cholecystectomy syndrome and urinary tract infections In the last named as a matter of fact Strax and Wright regard aureomycin as the drug of choice

High concentrations of aureomycin in bile make the new antibiotic particularly valuable in procedures involving gallbladder and biliary tract

In Radiation Therapy

For reasons not yet completely clear aureomycin protects against irradiation sickness whether the physical modality is given therapeutically (as in x ray treatment of malignancy) or through exposure to products of atomic fission

If preliminary observations are confirmed aureomycin increases the tolerance of patients to x ray therapy and may prove of inestimable indirect value in the treatment of cancer

Toxicology

Aureomycin has no significant toxicology Many patients however develop nuisance symptoms including nausea vomiting diarrhea and anorectal burning An occasional instance of angioneurotic edema has been reported (J A M A 143 653 1950)

Gastric tolerance is increased by simultaneous administration of large quantities of water milk or cream cheese Aluminum salts suggested in early experiments are best omitted since they tend to reduce blood concentrations of antibiotic (J A M A 141 938 1949) If gastrointestinal disturbances are annoying or persistent aureomycin may be injected intravenously or chloramphenicol substituted in somewhat larger doses

Antitherapeutic Devices (p 4133)

An occasional patient exhibits allergy to aureomycin just as occurs with every other antigen In consequence it is wise to give antihistamine concurrently with the antibiotic particularly to patients with a known history of allergic hypersensitivity

Thus far bacterial resistance and fastness have not been noted nor have more serious tuberculin type hypersensitivity phenomena been observed

The single important antitherapeutic threat posed by aureomycin appears to be its effect in increasing blood coagulability Significant changes are noted shortly after administration of therapeutic doses raising the hazard of complicating thrombophlebitis and secondary embolic phenomena Aureomycin treated post operatives and debili-

tated patients with chronic disease must be ambulated as soon as is possible

Combined Antibiotic Therapy

Combined antibiotic therapy using aureomycin or chloramphenicol with penicillin permits the clinician to employ anti infective therapy for prophylaxis or cure with broadest coverage of the bacterial spectrum and almost minimum risk of toxicity

Exemplifying this in a program of venereal prophylaxis ingestion of 2 tablets each of 250 000 units of penicillin together with 4 capsules of aureomycin taken within a few hours after exposure may provide effectual prophylaxis against gonorrhea chancroid granuloma inguinale lymphopathia venereum and syphilis

Illustrative of curative potentialities of combined antibiotic therapy the practitioner confronted with a pneumonitis may observe a lysis of temperature and detoxification whether the patient is suffering from pneumococcal or viral pulmonary infection

Aureomycin Versus Chloramphenicol and Terramycin

The choice between aureomycin and chloramphenicol involves hair splitting If there is any doubt as to which to prescribe it is suggested that each product be ordered in half strength in the manner that has proven so satisfactory with sulfonamide derivatives Terramycin appears equally effective and somewhat less expensive

BACILLOMYCIN

An antibiotic derived from *B subtilis* Bacillomycin lacks antibacterial action but attacks many pathogenic fungi

Available Products

Bacillomycin is not yet commercially available

Therapeutics

Experimentally bacillomycin has been used in the treatment of histoplasmosis Intramuscular injections of 50 mg given every six hours however caused local pain and slough with temperatures as high as 104° F

BACITRACIN

An antibiotic prepared from cultures of *B subtilis* Systemic administration of bacitracin is not advised since the preparation is nephrotoxic when given parenterally

Available Products

Bacitracin Ointment (C S C or Upjohn) One gram = 500 units

Bacitracin Ophthalmic Ointment (C S C or Upjohn) One gram = 500 units

Bacitracin Powder (C S C or Upjohn) Sterile vials containing 2000 10 000 or 50 000 units The powder remains stable for eighteen months Add sterile distilled water to make a solution of 500 to 1000 units per cc Keep freshly prepared solution in refrigerator where it remains stable for eighteen months

Bacidrin (Upjohn) A lyophilized nasal preparation Add 15 cc of water to make a solution of which 1 cc contains 200 units of bacitracin and 5 mg of ephedrine Store in ice Instill or spray intranasally every two hours

Bacterial Spectrum

Bacitracin has a profound antibacterial effect paralleling penicillin It is effective against staphylococci streptococci gonococci *V comma* of cholera *P pestis* of plague *M melitensis* of brucellosis and other gram negative and gram positive pathogens It also exhibits some activity against *E histolytica* treponemes and fungi Its local effectiveness is not inhibited by admixture with plasma blood pus tissue juices or penicillinase It does not produce cross sensitivity with penicillin and may be used locally in place of penicillin to avoid sensitization phenomena

COMPARATIVE TOPICAL EFFECTS OF BACITRACIN AND PENICILLIN

| | Bacitracin | Penicillin |
|---|------------------|--------------------|
| Inactivated by bacterial penicillinase | No | Yes |
| Inactivated by exudate | No | Yes |
| Inactivated by tissue fluid | No | Yes |
| Inactivated by leukocytes | No | Yes |
| Sensitization | Approximately 1% | In excess of 10% |
| Later sensitization to parenteral injection of penicillin | No | Yes |
| Parenteral use | Not advised | Highly recommended |
| Toxicity (Parenteral) | Renal | Negligible |

Therapeutics

Bacitracin may be used as ointment collyrium wash aerosol spray instillation or local infiltration For the last purpose injections are made with 0.1 to 5 cc of a solution containing 400 units to the cc together with 2% procaine

For local or topical use the site is first cleansed with warm saline solution to remove all crusts Bacitracin wash or ointment is then applied in conditions such as localized pyoderms infected wounds carbuncles furuncles impetigo hordeolum abscesses ulcers ecthyma folliculitis cellulitis and sinus tracts The collyrium may be installed locally in the treatment of conjunctivitis keratitis and other superficial ocular infections

Oral bacitracin is under trial in amebiasis and the treatment of other enteric infections such as cholera plague etc. The efficacy of less toxic aureomycin and chloramphenicol makes it appear unlikely that bacitracin will be widely employed in these conditions.

BACTERIAL ALLERGIC HYPERSENSITIVITY

With increasing recognition of the etiologic role of bacteria in the production of allergic hypersensitivity reactions particularly of the chronic tuberculin type variety (p 4169) it becomes imperative to eliminate offending micro-organisms in order to palliate prevent and/or avoid serious and at times fatal clinical accidents (p 552).

Of available general therapeutic principles the practitioner employs mechanical measures especially surgical drainage and extirpation of foci (p 42) anti-infective agents particularly hypoallergenic antibiotics (p 4179) desensitization or hyposensitization employing bacterial vaccines (p 4180) and prophylaxis or palliation with antihistamines and adrenergics (p 4210).

General Principles of Diagnosis and Treatment

1 Attempt elimination of offending bacteria by use of *antibiotics*. Avoid sulfonamide which may produce tuberculin type sensitization.

2 If bacterial infection cannot be eliminated by antibiotic treatment consider *surgery* where indicated as in chronic infection of nasal accessory sinuses or where there is inadequate drainage due to a deviated nasal septum or an hypertrophied turbinate causing non-seasonal vasomotor rhinitis (p 2098) particularly insist on drainage of phenoid sinuses in uveitis (p 1632).

3 Concurrently with antibiotic administer antihistamine. Continue use of histamine antagonist for a prolonged period of time i.e. at least two weeks after last dose of antibiotic.

4 Use prophylactic antibiotic therapy (p 4362) at stated intervals to prevent reinfection by offending organism (as in rheumatic fever p 4493).

5 Consider desensitization with bacterial vaccine in infections resistant to antibiotics (deep fungus disease such as blastomycosis etc.)

BACTERICIDES

Prior to introduction of sulfonamide the effective bactericides were salts of metals. These possessed potent test tube activity and more than considerable host toxicity. By present standards compounds of mercury arsenic antimony gold silver and bismuth are relatively feeble but formidably dangerous anti-infective agents.

With birth of the Golden Age of Therapeutics an entirely new concept of bactericidal and bacteriostatic activity came into being. To be sure sulfonamides evinced some host toxicity but even this appeared negligible compared to potential untoward reactions to antimony, arsenic, gold and mercury. Since introduction of penicillin, the streptomycins, chloramphenicol and aureomycin, the toxicity of sulfonamides appears almost as formidable as that of older metallic salts.

So rich is the modern antibacterial artillery that the physician often is uncertain which potent agent to use and whether to employ a single preparation or blanket the field by combining two or even three antibiotics as in Probatory or Desperation Therapy (p 4221). The chart which follows indicates in broad terms the opulence of the field of anti-infectives.

SPECTRUM OF ANTIBACTERIAL AGENTS

| Anti-infective Agents | Gram negative Cocci | Gram positive Cocci | Gram negative Bacilli | Gram positive Bacilli |
|-----------------------|---------------------|---------------------|-----------------------|-----------------------|
| Aureomycin | + | + | + | + |
| Chloramphenicol | + | + | + | + |
| Dihydrostreptomycin | 0 | + | + | 0 |
| Neomycin | 0 | + | + | 0 |
| Penicillin | + | + | 0 | + |
| Streptomycin | + | + | + | 0 |
| Sulfonamide | + | + | + | 0 |
| Sulfones | 0 | 0 | + | 0 |

BACTERIOIDES FUNDULIFORMIS INFECTION

General Principles of Diagnosis and Therapy

1 Bacterioides, a large group of gram-negative anaerobic non-sporulent bacteria, are normal inhabitants of mucous surfaces, rupture of which may produce bacteremia.

2 In the test tube, bacterioides are insensitive to penicillin, streptomycin, and sulfadiazine but not to aureomycin.

3 In a report of two recent cases, recovery followed treatment with aureomycin in doses of 750 mg on the first day, 2 gm on the second day, 4 gm on the third day, and 5 gm daily thereafter until all manifestations of infection had been dissipated. Four patients previously treated with chemotherapy, other antibiotics, and supportive therapy died.

BACTERIOPHAGE

Bacteriophages (d'Herelle) are in actuality viruses which invade bacteria. They possess the following characteristics: They are capable of producing a latent infection in bacterial cells. During the course of

infected bacteria bacteriophages multiply They can be propagated indefinitely through series of cultures Bacteriophages are sufficiently small to pass through filters which hold back bacteria they are not sedimented in ordinary centrifuges

Bacteriophages are specific capable of lysing bacteria of one genus they do not ordinarily act on bacteria of another

Therapeutics

Bacteriophages have never been sufficiently perfected for general use by the practitioner They pose the threat of introducing living virus to combat invasion of host tissues by another living microbe

Effective bacteriophages have been developed against *P. pestis* (plague) *V. comma* (cholera) and staphylococci Inasmuch as each of these diseases responds to more easily available antibiotic whose introduction into the human body is simpler and safer specific bacteriophages must be regarded as obsolete

BAL

[British Anti Lewisite]

BAL (2,3-dimercaptopropanol) was prepared originally as a decontaminant for use in blister gas attacks In peacetime medical practice it has proven a most effective antidote in poisonings due to arsenic gold antimony mercury cadmium bismuth vanadium chromium zinc nickel and lead (p 762)

Available Products

Solution BAL in Oil (Hynson) Ampuls containing 4.5 cc of 10% BAL and 20% benzyl benzoate in peanut oil

Pharmacology

BAL is a dithiol As such it competes with physiologically essential cellular SH groups for arsenic mercury and gold In this way it prevents combination of heavy metal with these groups The stable combination of BAL and heavy metal is rapidly excreted ridding the body quickly of toxic agent

In mercurial poisoning the action of BAL is less effective due to the fact that excretion of mercury causes rapid and extensive renal damage which cannot be corrected through administration of antidote

Therapeutics

In arsenic and gold poisonings where BAL is most effective the antidote is injected intramuscularly in an initial dose of 3 mg per kg of body weight (approximately 2 cc of 10% solution in oil for an adult weighing 150 lbs) The dose is repeated every four hours for two days every six hours on the third day and every twelve hours thereafter for

ten days or until complete recovery has taken place provided that untoward manifestations due to BAL have not previously been encountered

In mercury lead antimony and bismuth poisonings results have been less conclusive and larger doses are required For initial deposit 5 mg per kg of body weight are recommended (3.5 cc of 10% solution in oil for the adult weighing 150 lbs) This dose is repeated at the end of one two and ten hours Thereafter 2 to 2.5 cc are injected each twelve to twenty four hours depending on the clinical course and the presence or absence of toxic manifestations due to the antidote itself

BAL is particularly useful in the treatment of arsenical dermatitis hemorrhagic encephalopathy agranulocytosis and toxic hepatitis Had BAL been available in the pre penicillin era arsenotherapy of syphilis and allied treponematoses might have been considerably less hazardous and significantly more efficacious Currently the survival of arsenotherapy may be decided by the extent to which penicillin results can be bettered by combined use of metal and antibiotic and the extent to which BAL mitigates arsenic toxicity

Toxicology

BAL is itself a poison Large doses approximating the concentrations given in mercurial poisoning may produce nausea vomiting headache burning of lips mouth throat and eyes generalized muscular aches burning and tingling of the extremities peripheral circulatory collapse a sense of constriction in the chest and anxiety These occur within fifteen to twenty minutes after injection and may be prevented or ameliorated by preliminary use of 25 mg of ephedrine given orally a half hour before injection and repeated at thirty to ninety minute intervals if necessary

BALANTIDIASIS

Principles of Diagnosis and Treatment

1 The presence of *Balantidia* in the stool is not necessarily indicative of the pathogenicity of the organism (Fig 423 p 1892) Only if there is no other obvious cause for symptoms should the organism be regarded as the etiologic agent (p 1893)

2 Since enterocolitis due to *Balantidia* is a relatively benign and self limited disorder use of therapeutic agents which have a capacity for toxicity is not warranted Preference is given to relatively non toxic amebicides employed in intra intestinal infestations

Practical Management

Immediate Care

1 Order 2 tablets of diodoquin each of 210 mg five times daily for ten days

2 If symptoms are not controlled and/or stools remain positive for

following the first course repeat after an interval of a week to ten days. Other oxyquinolines (p 4442) such as vioform and chiniofon are less effective and may complicate the clinical picture by producing diarrhea medicamentosa on the second or third treatment day.

3 Of more drastic remedies tried in balantidiasis emetine oil of chenopodium and tryparsamide appear excessively toxic for use in a benign disease. If oxyquinolines fail aureomycin or pentavalent arsenicals (carbarone) may be substituted as in amebiasis (p 4183).

4 For persistent symptoms intramuscular injections of 2.7 mg of biniodide of mercury have been suggested. After the first injection nine reported patients became symptom free they were parasite-free after the second injection.

BARBITURATE POISONING ACUTE

General Principles of Diagnosis and Therapy

1 Although the incidence of acute barbiturate poisoning has increased alarmingly most patients take considerably less than a lethal dose. Consequently profoundly poisoned or fatal instances as seen in institutional practice are rarely encountered in private practice. More often than not the suicidal attempt is a gesture that does not require inauguration of heroic measures later described.

2 If the dose of the barbiturate appears to have been less than 50 grains a favorable prognosis is warranted and the therapeutic policy may be one of watchful waiting. Amounts in excess of 100 grains approach the lethal quantity intermediate doses may or may not be fatal depending on individual circumstances and efficacy of therapy.

3 The paramount danger in barbiturate poisoning is respiratory depression and not loss of consciousness. So long as the color is satisfactory and cardiorespiratory activities are maintained there is no immediate danger.

4 The earlier the patient is seen the better the prognosis if swallowed drug can be removed partially by gastric lavage or induced emesis.

5 The longer the patient survives following ingestion of drug the better the prognosis particularly if a rapidly acting barbiturate has been taken.

6 In the use of analeptic (p 4188) for the seriously poisoned individual the fear of producing convulsions has been exaggerated. In point of fact induced convulsions may be regarded as shock therapy.

Practical Management

Immediate Care

1 If the patient is still conscious on arrival or can be aroused induce vomiting by home remedies such as mustard in water or ipecac or give an injection of 5 mg of apomorphine.

2 If the patient is asleep on arrival but respirations are not excessively depressed intubate the stomach intranasally and lavage with warm water or tea. Retain lavage washings for chemical analysis and for medicolegal purposes.

3 If the patient is deeply somnolent with evidence of marked cardiorespiratory depression prepare to inject analeptic. For immediate effect prefer metrazol. Introduce intravenously 3 cc of 10% solution. Observe effects carefully. Grimacing, twitching or return of consciousness suggest that the poisoning is not excessively severe. Failure of response requires repetition of the dose and consideration of supplementation with picrotoxin later described.

4 If metrazol is not available for rapid effect prefer amphetamine sulfate as second choice. Inject intravenously 10 to 40 mg. Prepare to interrupt injection on appearance of sympathomimetic side effects such as tachycardia, elevation of blood pressure, etc.

5 Despite enthusiastic reports reserve nikethamide (coramine) for third choice as a rapidly acting analeptic. If metrazol or amphetamine cannot be obtained inject intravenously 3 cc (750 mg) of nikethamide.

6 If the rapidly acting analeptics are successful and consciousness returns it may not be necessary to use picrotoxin. However if there is failure of response to metrazol, amphetamine or nikethamide or if rapidly acting analeptics produce only a brief return of consciousness followed by somnolence inject intravenously an initial dose of 2 cc of 0.3% solution of picrotoxin.

7 Since the maximum effect of picrotoxin does not occur for approximately thirty minutes repetition of the longer acting analeptic must be postponed. Meantime if respiratory depression is profound repeat the rapidly acting analeptic using 3 to 5 cc of metrazol, 20 to 40 mg of amphetamine or 3 cc of nikethamide.

8 If respirations are not effectively restored thirty minutes after the first picrotoxin injection repeat the analeptic increasing the dose to 3 cc (9 mg). Successive doses given at 30 minute intervals may be increased if necessary to 5 cc (15 mg).

9 Since the effective picrotoxin dose for medullary stimulation approximates the convulsive dose the patient may develop seizures. These need not cause alarm unless they are too frequent or too violent. Under either of the latter circumstances it may be necessary to use intravenous injections of a rapidly acting barbiturate such as sodium pentothal in sufficient amount to produce quiet.

10 Just as soon as respirations have been re-established pass an endotracheal tube to clear the airway and permit suction removal of bronchial mucus or of gastric lavage washings that may have spilled over into the respiratory passages.

7 artificial respiration manually or instrumentally pro-
herapy by mask or tent

xy warmth with warm blankets

Order 2 table 000 units of procaine penicillin G in oil with 2%
te days sarate to prevent hypostatic or aspiration pneu

14 Catheterize bladder and repeat every six or eight hours Keep urine for medicolegal examination

15 As soon as circumstances permit, set up an intravenous drip using 5% dextrose in physiologic saline for the first 2 000 cc Use the rubber tubing for injection of analeptic if required

16 As soon as consciousness returns urge the patient to take fluids orally Maintain vigilance to prevent further attempts at suicide

17 Each twenty four hours repeat deposit of penicillin

18 Remember that there is no substitute for eternal vigilance in the treatment of barbiturate poisoning The physician must be in constant attendance He must be prepared to shift the therapeutic program according to patient responses So long as cardiorespiratory activities are maintained recovery is possible With beginning failure of either system larger doses of analeptic are required since the fear of inducing convulsions does not compare to the hazard of anoxemia

19 Try to have a consultant psychiatrist see the patient during the acute episode At this time much important material may be obtained and formal psychotherapy may be inaugurated

BISMUTH

Except as an accessory to penicillin in the treatment of syphilis the therapeutic usefulness of parenterally administered bismuth preparations (p 126) appears very limited

For systemic effect the practitioner has the choice of aqueous solutions solutions in organic solvents oily solutions suspensions in oil or water oral tablets and of a product combining bismuth and arphenamine (bismarsen) Of these bismuth subsalicylate in oil U.S.P. (10%) is least objectionable It may be deposited intramuscularly once weekly in a dose of 1 cc equivalent to 100 mg of metal

Available Products

Suspension Bismuth Subsalsalicylate in Oil with 3% Chlorobutanol (Abbott Endo Parke Davis Smith Dorsey Upjohn)

Toxicity

See p 127

Antidote

BAL (p 4251)

BLASTOMYCOSIS

[Gilchrist's Disease Lutz Splendore Almeida's Disease
Paracoccidioidal Granuloma Cryptococcosis
Busse Buschke's Disease]

Principles of Diagnosis and Treatment

1 Blastomyces (Fig 75 p 486) are capable of producing cutaneous lesions (Fig 966 p 3311) readily diagnosed by simple laboratory tech

nis Systemic blastomycosis is less frequently recognized. It requires serious consideration in the management of idiopathic chronic osteomyelitis (Fig 78 p 494) and chronic pneumonitis (Fig 503 p 2211) when the usual pathogens cannot be demonstrated after careful and repeated searches.

2 To assist in the definitive diagnosis of blastomycosis the practitioner has recourse to sputum cultures on special media, a cutaneous reaction and a complement fixation test. Of these only the first is completely satisfactory. Skin tests may produce false negative responses particularly in terminal infections; the complement fixation reaction while it does not give false positive tests gives an occasional false negative when sputum examinations are definitely positive.

3 The treatment of systemic blastomycosis is most unsatisfactory. With the exception of reports of successful use of penicillin in a single patient there appears to be no subject on which authorities agree except that none of the alleged specifics produces consistently favorable responses. Reported results of iodide therapy best illustrate the confusion that exists. Thus it is stated that in the treatment of systemic types of blastomycosis it is believed that iodides not only fail to arrest the disease but may cause a rapid spread of lesions. On the other hand claims are made that after desensitization with vaccine iodides can be more safely administered and sometimes may cure the infection. Starrs and Klotz (whose classical article is recommended to those specially interested in blastomycosis) state that iodides usually have no effect and again that in some cases iodides do actual harm (Arch Int Med 82 1 1948).

4 Under these circumstances with disagreement or unsatisfactory reports of therapy from all authorities the practitioner who treats an occasional patient suffering from systemic blastomycosis is justified in pursuing Probatory and Desperation Anti-infective Therapy. If possible subcultures of the fungus are obtained for test tube estimation of its sensitivity to the various antibiotics presently available.

Practical Management

Immediate Care

1 If cutaneous lesions of blastomycosis can be excised without excessive scarring or disfigurement surgical excision is warranted in view of the gravity of the disease and the unsatisfactory status of therapy. Those lesions which cannot be excised may be incised and thoroughly curetted or cauterized under general anesthesia.

2 Extensive cutaneous lesions not surgically accessible may be exposed to roentgen therapy which has considerable potential for benefit and very little hazard of toxicity.

3 For systemic management follow steps recommended in the treatment of actinomycosis (p 4141) with the exceptions noted below.

4 Obtain blastomycosis vaccine from Dr Donald S. Martin of the Duke University School of Medicine Durham North Carolina. With

this vaccine make an intracutaneous test using 1:1000 dilution. A punctate erythema appearing about the site of injection within fifteen to twenty minutes indicates sensitivity.

5. Desensitize positive reactors by subcutaneous injections of 0.1 cc of vaccine using the dilution which produces minimum erythema. Increase each dose by increments of 0.1 cc every second or third day if possible until a full dose of 1 cc of undiluted vaccine can be administered.

6. Do not inaugurate iodide therapy until positive reactors have been desensitized. Vaccine therapy however may be given immediately to non reactors.

7. Iodides may be given orally, intravenously or by inhalation. For oral use order saturated solution of potassium iodide in a dose of 0.3 cc three times daily in water, soup or milk. Increase the dose daily by increments of 0.1 cc until 4 cc are given three times daily. Stop iodide administration when manifestations of iodism (p. 612) appear.

For iodide inhalation obtain a special inhalor of the types manufactured by Warren Collins or Burnham. Start inhalations with 0.2 cc of ethyl iodide three times daily. Increase each dose by increments of 0.1 cc until a full dose of 1 cc can be tolerated three times daily.

For intravenous injections of iodide sodium salt is usually employed though it is not clear why a simple salt should be given intravenously when it is so readily absorbed by mouth or inhalation.

8. During iodide therapy be on the alert for chronic tuberculin hypersensitivity manifestations (p. 4169) possibly caused by the intended therapeutic agent.

Continuing Care (Favorable Course) (Unfavorable Course) (Progressively Unfavorable Course) See Actinomycosis

BLOOD AND SERUM

Blood functions as a potent anti-infective agent. Injections of homologous and heterologous blood and/or their fractions or components are used to produce artificially acquired active and passive immunity.

Homologous Human Blood

Homologous human blood is used particularly to increase the resistance of depleted and anemic patients. In addition derivatives and fractions are injected for specific anti-infective therapy as exemplified by convalescent serums and gamma globulin.

Homologous products are employed primarily for prophylaxis since they have a low antibody titer. They are of no value as antitoxic agents but possess some antibacterial potential as exemplified particularly in pertussis. They enjoy the advantage over heterologous products in that they do not produce allergic hypersensitivity reactions.

Heterologous Antibacterial and Antitoxic Serums

Heterologous bloods their component fractions and derivatives usually are drawn from horses unless otherwise stated. They are employed for passive transfer of preformed antibody specifically produced by injection of offending antigen into experimental animals.

In contrast to homologous human blood heterologous serums usually are of high antibody titer but their introduction may result in serious and at times fatal hypersensitivity reactions (p 4187).

The use of both homologous and heterologous bloods and serums has diminished since introduction of antibiotics. The newly available anti-infective agents are simple to administer, relatively non-toxic, powerfully bacteriostatic and bactericidal, and rarely productive of significant hypersensitivity reactions.

It is only for antitoxic effects that heterologous serums excel such products as penicillin, aureomycin and chloramphenicol. In the treatment of invasions caused by organisms capable of secreting soluble toxin (diphtheria, gas gangrene, tetanus, botulism, and certain streptococci) serum therapy continues to be of prime importance with antibiotic used as supplementation.

By contrast to antitoxins, antibacterial serums approach obsolescence except perhaps in the treatment of plague, pertussis, rabies, and *H. influenzae meningitis*.

HOMOLOGOUS BLOOD AND DERIVATIVES

Whole Citrated Normal Blood

Obtain from Wassermann negative healthy donor by phlebotomy (p 3780).

After cross matching, transfuse (p 3711 and 3778) to raise general immunity.

Whole Citrated Normal Banked Human Blood

Obtain from blood bank (p 3778). Irradiate to prevent homologous serum hepatitis (p 4358). Cross match and transfuse as above.

Whole Citrated Convalescent Human Blood

Obtained from donor recently convalescent from specific disease or actively immunized against invading micro-organism.

Normal Human Serum USP

(Deutsch Hyland)

Rarely of significant antibody titer. Prefer globulin fractions when available.

Irradiate to prevent homologous serum hepatitis (p 4358).

Citrated Normal Plasma USP

(p 3778)

Prefer Irradiated Lyovac prepared from fresh citrated human blood, taken from healthy donors, pooled, flash frozen, dehydrated under high vacuum by lyophilic process, and sealed. Requires neither typing nor cross matching. One unit equals two units of whole blood. Available in 50, 250, and 500 cc vials. Use principally to restore circulating protein, supply complement, and combat shock. Antibody titer rarely significant. Do not use in nephrosis because of high sodium content and because only half of protein is albumin fraction, most needed by the patient.

Albumin Fraction NF

(Cutter)

Salt poor fractionate of pooled human plasma. Supplied in vials containing 5 gm with 20 cc of buffered diluent. Has no value as an infective agent but is useful in hypoproteinemia, forward failure or shock, or nephrosis. Inject 1 cc per pound of body weight, per day intravenously.

HOMOLOGOUS BLOOD AND DERIVATIVES (Continued)

Human Serum Immune Gamma Globulin Fraction USP

(Cutter Wyeth Lederle)

Contains concentrated antibody factors for passive immunization of certain communicable diseases especially measles mumps pertussis and virus hepatitis. Each 2 cc is the equivalent of 40 cc of original plasma. Give 0.1 cc per pound of body weight intramuscularly for prophylaxis of measles give 0.3 cc per pound of body weight for modification of measles if patient is first seen on fourth to seventh day after exposure.

To prevent or modify virus hepatitis inject 10 cc in pre-icteric phase if possible.

To prevent mumps complications give 40 to 60 cc intramuscularly if available.

For prevention or treatment of pertussis give 25 cc intramuscularly preferably of a serum especially prepared from healthy hyperimmunized human donors (Cutter). Repeat after twenty four or forty-eight hours if necessary.

Human Immune Globulin USP Placental Extract

(Lederle Sharp & Dohme Wyeth)

For prevention of measles give 2 to 10 cc by intramuscular injection if human serum gamma globulin fraction is not available. For modification inject intramuscularly 2 to 3 cc if patient is first seen four to seven days after exposure.

Repeat after twenty four to forty-eight hours if possible.

Human Fibrinogen

(Cutter)

Contains 60% fibrinogen and 40% globulins including antihemophilic fraction. Prefer antihemophilic globulin (see below) for hemophilia (p 1116).

Fibrin Foam and Thrombin

(Cutter)

Available in segments of 250 mg. Moisten with thrombin solution for use as absorbable hemostatic in general surgery dentistry and neurosurgery.

Thrombin Coagulum

Powder for use with fibrin foam as hemostatic. Prefer combined fibrin foam with thrombin (see above).

Fibrin Film

(Cutter)

Available in sterile sheets for use as a protective particularly in treatment of denuded areas as in burns and neurosurgery.

Antihemophilic Globulin

(Cutter)

Globulin fraction containing fibrinogen. Intravenous dose of 5 cc reduces clotting time to less than ten minutes within half hour. Effect persists for four hours. Of tremendous value as hemostatic in hemophilia as prophylactic when surgery becomes necessary in these patients (p 1116).

Resuspended Red Cells

Obtained after removal of plasma. May be reinfused in treatment of anemias (p 1055).

Modified Globulin

Protein component of hemoglobin after splitting off iron containing pyrrole group. Residual protein (globin) modified to make concentrated preparation of low viscosity. Delivers triple dose of protein per unit as compared with plasma. Not yet commercially available.

Prothrombin

Impure product consisting largely of beta-globulin. Not commercially available.

Human Measles Immune Serum NF

(Milwaukee and Deutsch Serum Centers)

Prefer gamma globulin when available. For prevention or modification of measles inject intramuscularly 10 to 20 cc.

Human Scarlet Fever Immune Serum NF

(Milwaukee and Deutsch Serum Centers)

For prevention, inject intramuscularly 10-20 cc. For active treatment prefer penicillin and aureomycin.

HOMOLOGOUS BLOOD AND DERIVATIVES (Continued)

Human Pertussis Immune Serum N F

(Hyland Philadelphia Serum Exchange)

Lympholized or concentrated globulin fraction For prophylaxis inject 20 cc intramuscularly every day or every second day for three injections For treatment of very sick children, inject 60 to 100 cc intravenously diluted to 300 cc with sterile physiologic saline May be superseded by aureomycin or chloramphenicol

Human Rubella (German Measles) Serum

Not commercially available Obtain from recent convalescents for use in early months of pregnancy to prevent congenital disorders of infancy (p 450)

Human Poliomyelitis Immune Serum

(Hyland)

Desperation measure for use in prophylaxis of infantile paralysis during an epidemic Inject 10 to 20 cc intramuscularly Repeat daily or every second day for two or three injections if material is available

Human Plague Immune Serum

Unofficial but recommended by experts for prevention of plague Inject 10 to 20 cc intramuscularly Repeat after twenty four to forty eight hours if material is available

Human Tularemia Immune Serum

Unofficial Superseded by aureomycin and chloramphenicol

Human Rocky Mountain Spotted Fever Immune Serum

Unofficial Not commercially available Superseded by aureomycin and chloramphenicol

Human Yellow Fever Immune Serum

Unofficial but recommended by experts in treatment of yellow fever

Human Epidemic Parotitis (Mumps) Immune Serum

Unofficial Not commercially available Obtain from recent convalescents for treatment of adults to prevent orchitis and oophoritis Inject 10 to 20 cc intramuscularly Repeat twice if material is available

Human Brucellosis Immune Serum

Unofficial Superseded by aureomycin and chloramphenicol

Human Bacillary Dysentery Immune Serum

(Ann Shigellosis)

Unofficial Superseded by chloramphenicol and sulfonamides

Human Spirochetal laundice Immune Serum

Unofficial Superseded by penicillin and perhaps aureomycin

Human Typhus Immune Serum

Unofficial Superseded by aureomycin and chloramphenicol

HETEROLOGOUS SERUMS AS ANTI INFECTIVE AGENTS

WARNING Injection of Heterologous Serum may cause fatal *anaphylactic shock* or serum sickness For prevention treatment detection of hyper sensitivity and methods for desensitization, see p 4191

Antivenin (Crotalus) N N R

(Wyeth)

Specific for snake bite (rattle snake water snake moccasin, etc) (p 3196) Inject 15 to 75 cc intramuscularly or intravenously with equal amount in the vicinity of bite (p 4523)

Antivenin (Latrodectus Mactans) N N R

(Lyovac Sharp & Dohme)

Specific for black widow spider bite Inject 25 cc intramuscularly Repeat frequently if necessary (p 4229)

Botulism Antitoxin N N R

(Lederle)

Desperation remedy in botulism. Inject 2500 units subcutaneously for prophylaxis and 10 000 units intravenously for treatment (p 4266)

HETEROLOGOUS SERUMS AS ANTI INFECTIVE AGENTS (Continued)

Diphtheria Antitoxin U.S.P.

(Lederle Pitman Moore)

Use in diphtheria with penicillin. Inject 1000 units subcutaneously for prophylaxis. Give 20 000 to 40 000 units intramuscularly or intravenously for active treatment (p 4302)

Gas Gangrene Antitoxin (Cl. perfringens and Cl. septicum) U.S.P.

(Cutter Lilly)

Prefer tetanus combined (see below). If given, inject contents of 1 to 4 vials intramuscularly or intravenously (diluted to 300 cc. with saline solution)

Gas-Gangrene Antitoxin (Cl. perfringens septicum, novyi sordelli and histolyticum) U.S.P.

(Lederle)

Prefer tetanus combined (see below). If used, give contents of 1 to 4 vials intramuscularly or intravenously (diluted to 300 cc with sterile saline)

Tetanus Antitoxin (Horse Bovine) U.S.P.

(Lederle Pitman Moore)

Give 1500 to 5000 units subcutaneously for prophylaxis and 10 000 to 100 000 units intravenously for treatment (diluted to 300 cc with saline solution) (p 4564)

Tetanus-Gas Gangrene Antitoxin (Cl. welchii septicum and tetani) U.S.P.

(Cutter Lederle Lilly National Parke Davis Squibb Wyeth)

To supplement penicillin therapy in infections due to tetanus and other Clostridia (pp 300 and 4341). Inject contents of 2 vials intramuscularly or intravenously (diluted to 300 cc with saline) and repeat as necessary (p 4343)

Scarlet Fever Streptococcus Antitoxin U.S.P.

(Parke Davis Lederle)

Despite efficacy of penicillin, retain in severe toxic infections. Give 3000 units for prevention, and 9000 units for treatment. Inject intramuscularly (p 4515)

Staphylococcus Antitoxin N.N.R.

Obsolete through efficacy of penicillin, aureomycin sulfonamides etc (p 4528)

Anti Anthrax Antibacterial Serum N.N.R.

For use with penicillin streptomycin and aureomycin. Inject 200 cc intravenously with 300 cc saline (p 4198)

Antidysenteric Antibacterial Serum N.N.R.

(Parke Davis)

Obsolete through efficacy of chloramphenicol and sulfonamides. If used, inject 10 cc intramuscularly for prophylaxis and 20-60 cc intravenously for active treatment after dilution to 300 cc with physiologic saline (p 4520)

Anti Erysipeloid Antibacterial Serum N.N.R.

(Pitman Moore)

Obsolete through efficacy of penicillin. If used inject intramuscularly 10 cc (p 4322)

Anti Meningococcus Antibacterial Serum U.S.P.

(Parke Davis)

Obsolete through efficacy of sulfonamides penicillin and aureomycin. If used, give 20 000 to 40 000 units intramuscularly or intravenously (after dilution to 300 cc with physiologic saline) (p 4408)

Anti Pneumococcus Type-Specific Antibacterial Serum U.S.P. (Horse Rabbit)

(Lederle Wyeth)

Obsolete through efficacy of penicillin and sulfonamides

Anti H. influenzae B-Antibacterial Serum

(Squibb)

Obsolete through efficacy of aureomycin chloramphenicol and streptomycin sulfonamide. If used give contents of 4 vials (100 mg) intravenously after dilution to 150 cc with saline

Erysipelas-Streptococcus Antitoxin

Obsolete since efficacy of penicillin and sulfonamide

HETEROLOGOUS SERUMS AS ANTI INFECTIVE AGENTS (Continued)

Anti Pertussis Hyperimmune Rabbit Serum
(Squibb)

Refined, concentrated globulin fraction. Obsolete through efficacy of aureomycin, chloramphenicol, polymyxin and streptomycin. If used, inject 4 cc intramuscularly. Repeat in twenty four to thirty six hours if necessary.

Anti Tularemia Serum

Obsolete through efficacy of aureomycin, chloramphenicol and streptomycin.

Anti Typhus Serum

Obsolete through efficacy of aureomycin and chloramphenicol.

Anti Rocky Mountain Spotted Fever Serum (Rabbit)
(Lederle)

Obsolete through efficacy of aureomycin and chloramphenicol. If used, inject 60 cc intramuscularly and repeat if necessary.

Anti Brucellosis Serum

Obsolete through efficacy of aureomycin, chloramphenicol and streptomycin sulfonamide.

Anti Infectious Jaundice (Spirochetal) Serum

Obsolete through efficacy of penicillin and aureomycin.

Anti Plague Serum

To supplement antibiotic therapy.

Anti Rabies Hyperimmune Serum

Under investigational use to supplant rabies virus (p 4487).

BLOOD AND BLOOD FORMING ORGANS, NEOPLASMS OF

Tumors of the blood and blood forming organs are being recognized with increasing frequency. At times they are diagnosed in the asymptomatic stage from the routine blood count. Symptomatic hematopoietic malignancies are recognized in the investigation of asthenia (p 2890) cryptogenic fever in childhood (p 2760) generalized lymphadenopathy (p 1136) cervical lymphadenopathy (p 3518) axillary lymphadenopathy (p 3526) mediastinal lymphadenopathy (p 2804) inguinal lymphadenopathy (p 3092) and splenomegaly (p 1129).

ACUTE LEUKEMIA (FIG 233 P 1104 AND P 1101)

Practical Management

- 1 Get a complete blood count from the fingertip (p 3696) and make several blood spreads (p 1046).
- 2 Obtain venous blood for heterophile agglutination (p 468). A negative test repeatedly obtained excludes infectious mononucleosis (Fig 71 p 469 and p 466). A positive test suggests the presence of the benign virus infection with its completely hopeful prognosis.
- 3 If infectious mononucleosis can be excluded refer the patient directly to a hematologist preferably for institutionalization. Here in addition to repetition of the blood count further data may be obtained by making spreads from bone marrow obtained through Jernstam puncture (p 1043).
- 4 Apply for ACTH which often produces rapid and at least temporary remissions.

5 Under close supervision consider subcutaneous or intramuscular injections of aminopterin using daily doses of 0.5 to 1 mg. Watch clinical manifestations and peripheral blood count so that the drug may be discontinued on appearance of toxic manifestations including stomatitis, melena due to ulceration of the intestinal epithelium, anemia, thrombocytopenia or complete leukopenia.

6 If a remission is obtained with reduction of leukocytes to approximately normal numbers, decrease in size of subcutaneous lymph nodes and lessening of hepato-splenomegaly, reduce dose and attempt to maintain remission with a lesser amount given at increasing intervals of forty-eight to seventy-two hours.

7 Transfusions may be of symptomatic value but roentgen therapy, splenectomy and administrations of potassium arsenite (Fowler's solution), urethane, benzol, estrogen and androgen offer no hope for benefit.

8 As a desperation remedy ACTH and aminopterin failing, injection of nitrogen mustard may be considered (p. 4439).

CHRONIC LYMPHATIC LEUKEMIA

Practical Management

1 Patients with chronic lymphatic leukemia (Fig. 233, p. 1104 and p. 1102) may live a considerable span of years in contrast to those with acute types of leukemia.

2 Roentgen therapy is first choice in practical management and may be conducted ambulatory or in the institution.

3 During roentgen therapy frequent blood counts are required. If anemia develops, transfusions are clearly indicated. Treatment must be interrupted if total white count falls below 3600 cells or if thrombocytopenia develops.

4 Irradiation sickness may be prevented and mitigated by simultaneous oral administration of aureomycin using doses of 0.5 gm. thrice or four times daily.

5 When available, injections of anterior pituitary corticotrophic hormone or of cortisone (adrenocortical hormone) may be considered during or following roentgen therapy.

6 Of secondary remedies, potassium arsenite (Fowler's solution) is most readily available and holds least threat of toxic reactions. Forkner recommends initial doses of 0.3 cc. three times daily for two days. The dose is preferably given in orange juice immediately after or with meals. On the third and fourth days the dose is increased to 0.4 cc. three times daily. Daily increments are continued until the patient receives a total dose of 0.6 cc. three times daily unless toxic symptoms intervene or the leukocyte count approaches normal.

7 On the appearance of toxic symptoms or the accomplishment of a normal leukocyte count, arsenic is omitted for two to five days. At the end of this holiday the maximum dose is repeated and then decreased by small stages until a maintenance dose of 0.3 to 0.4 cc. three times daily is reached. This amount is continued indefinitely provided that all is well.

8 In the presence of a favorable response to potassium arsenite roentgen therapy again may be resumed occasionally with successful issue

9 With continued roentgen resistance and failure of potassium arsenite P^{32} is next choice since the radioactive isotope may be given orally and toxic symptoms are relatively insignificant

10 Finally all else failing injections of nitrogen mustard merit consideration despite toxicity (p 4439) At times roentgen resistance dissipates and a favorable response to irradiation therapy may be obtained Splenectomy and benzol hold no promise for relief

CHRONIC MYELOID LEUKEMIA

Practical Management

1 As in the instance of chronic lymphatic leukemia the patient with chronic myeloid leukemia (Fig 233 p 1104 and p 1102) may survive for a considerable length of time despite massive hepatosplenomegaly

2 Roentgen therapy is the therapeutic procedure of choice It may be administered ambulatory or in the hospital

3 The course of therapy must be followed by repeated blood counts The development of anemia requires transfusion of whole blood With marked leukopenia or thrombocytopenia irradiation therapy must be interrupted Radiation sickness may be prevented and mitigated by simultaneous use of aureomycin in doses approximating 0.5 gm thrice or four times daily Concurrently dramamine in doses of 50 mg four times daily may be employed as in travel sickness (p 4218)

4 In the roentgen resistant consideration must be given to potassium arsenite (Towler's solution) urethane P^{32} and nitrogen mustard in approximately that order Splenectomy benzol and aminopterin hold no promise

5 For second choice in the radio resistant potassium arsenite is recommended as in the treatment of chronic lymphatic leukemia (p 4263) Following arsenotherapy irradiation may be subjected to another trial since radio resistance may disappear

6 For third trial in those who have become radio resistant and who fail to respond to potassium arsenite P^{32} is recommended by oral administration

7 For fourth choice the practitioner institutes therapy with urethane using doses approximating 4 cc of the commercial elixir (Abbott) twice daily In the absence of toxic manifestations (anemia leukopenia thrombocytopenia ecchymoses or hematuria) and in the absence of a significant reduction in the total leukocyte count the dose is increased by increments of 4 cc to a maximum of 11 cc four times daily (approximately 4.5 gm for the total daily dose)

8 Following urethane therapy roentgen irradiation again may be attempted in the hope that patient resistance has disappeared

9 Finally all else failing nitrogen mustard injections require con

sideration despite the toxicity of the product the patient meantime being fortified with frequent transfusions of whole blood

10 When available treatment with anterior pituitary corticotropic hormone (ACTH) or with cortisone (adrenocortical extract) merits serious consideration since preliminary reports indicate successful though transitory remissions and the toxicity of the hormones is relatively slight compared with other available preparations

POLYCYTHEMIA

Practical Management

1 So successful is administration of P^{32} in the treatment of polycythemia vera (p 1093) that no other form of therapy is comparable Oral administration of doses as small as 5 millicuries may produce remissions lasting for several years at the end of which time the dose may be repeated

2 The ease safety and demonstrable efficacy of P^{32} in the treatment of polycythemia vera relegates to obsolescence previous therapeutic agents including repeated transfusions iron poor diet irradiation urethane nitrogen mustard phenylhydrazin pyridine benzol arsenic and splenectomy (p 1094)

HODGKIN'S DISEASE AND OTHER MALIGNANT LYMPHOMAS (P 1138 AND FIG 237 P 1139)

Practical Management

1 Establish diagnosis by histologic examination of an excised lymph node (p 3935)

2 Obtain chest x rays for determination of extent of mediastinal lymphadenopathy

3 Roentgen therapy is procedure of choice Try to reduce hazard of radiation sickness by concurrent administration of aureomycin 0.5 gm thrice or four times daily and dramamine 50 mg four times daily If anemia develops introduce 500 cc of whole blood In the presence of leukopenia or thrombocytopenia interrupt therapy

4 In the roentgen resistant recourse must be had to injections of nitrogen mustard despite the hazard (p 4439) At the termination of nitrogen mustard therapy irradiation may be resumed in the hope that the tissues have again become sensitive

5 When available anterior pituitary corticotropic hormone (ACTH) and cortisone (adrenocortical hormone) merit thorough trial In preliminary reports at least transitory remissions have been obtained These may serve to tide the patient over when radio resistance has developed Until preparations are commercially available make application for cortisone to Merck and Co Rahway N J or to Dr Chester S Keefer Chairman National Academy Allocation Committee 2101 Constitution Ave Washington D C for ACTH to Dr John R Mote Armour and Co Chicago Illinois Meantime make clinical trials of artisone (Wyeth) and percorten (Ciba) purchasable in the open market In

the use of the latter inject 1 cc intramuscularly (equivalent to 5 mg deoxycortico-sterone) followed within five minutes by intravenous introduction of 10 cc of 10% ascorbic acid (1 gm.) Unless prompt and dramatic improvement is noted with artison and percorten—ascorbic acid abandon therapy after three or four consecutive daily injections

6 Potassium arsenite (Fowler's solution) aminopterin P²² urethane benzol and splenectomy offer no promise of beneficial results

MULTIPLE MYELOMA (P 1126)

Practical Management

1 The prognosis of multiple myeloma unfortunately still remains hopeless

2 The symptoms of multiple myeloma may be controlled by administration of 3 to 6 gm daily of urethane (p 4264) The drug despite its toxicity relieves pain decreases plasma protein and may cause myeloma cells to disappear from the marrow

3 Urethane failing intravenous or intramuscular injections of 150 mg of stilbamidine with 2% procaine may be tried at daily interval for 20 to 30 injections

4 Toxic reactions to intravenous stilbamidine include local pain along the course of the vein a feeling of warmth and a fall of blood pressure that may be sufficiently great to produce syncope Delayed toxic reactions include subjective disturbances and dissociated anesthesia of areas supplied by sensory branches of the trigeminal nerve These symptoms may not appear for two to five months after completion of stilbamidine therapy Patients complain of numbness formication heaviness and itching of the affected area The sensation of touch is lost but pain temperature and pressure modalities remain

5 Gellhorn and Jones (Am J Med 6 202 1949) state that since there is ample evidence that the fundamental lesions are not significantly altered it must be concluded that the drug merely provides symptomatic relief In view of this and the high incidence of drug toxicity on the trigeminal nerve and the protracted duration of the drug we believe that stilbamidine therapy of multiple myeloma should be used only as a last therapeutic resort

BOTULISM

[Lamher Neck]

Principles of Diagnosis and Treatment

1 Botulism is one of the few bacterial disturbances relatively unaffected by recent developments in therapy Essentially the problem is that of neutralizing preformed toxin since clinical manifestations result from ingested poison rather than tissue invasion by *Clostridium botulinum*

2 Prophylaxis remains the prime endeavor *C. botulinum* is an anaerobic sporulent organism Its destruction requires five hours in

the autoclave Toxin formation is prevented by acidification of contents before canning or preserving Preformed antitoxin is inactivated by boiling for six to fifteen minutes

3 Since commercial canners and preservers have the facilities to avoid contamination of their products the main danger comes from home processing by the housewife

4 An official horse serum is commercially available (Botulin antitoxin bivalent (globulin modified) types A and E NNP (Lederle) in vials containing 10 000 units of each type) Under ideal conditions botulinum antitoxin has considerable therapeutic potential Unfortunately under realistic conditions which prevail in clinical practice its usefulness is limited Being a relatively rare condition the first local instance of botulism is rarely diagnosed immediately additionally there is delay in obtaining commercial antitoxin which is rarely stocked because of infrequent demands for it and finally like other heterologous antitoxic serums (p 4260) administration of botulinum antitoxin must be preceded by determination of hypersensitivity (p 4187) and desensitization (p 4191) if necessary

Practical Management

Prophylaxis

1 The housewife who does her own canning and preserving must obey the following precautionary measures in the preparation of her products

- (a) Preserves must be boiled for five hours before being placed in containers
- (b) Before serving home preserved products the contents of the container again must be boiled for fifteen minutes to destroy preformed toxin
- (c) Preserved food whether in glass or can must be discarded if there are evidences of leakage if the product is sour tasting sour smelling or obviously decomposed if the can bulges at the end and if there is escape of gas under pressure when the container is opened

2 As soon as the diagnosis of contamination is made by the appearance of the preserve or by recognition of the syndrome of botulism in the first patient local health authorities must be notified Meantime similar products are seized but not destroyed until they can be tested Examinations may be made officially by laboratory methods or crudely and unofficially by feeding the preserve to a single chicken Following an incubation period of twelve to thirty six hours the fowl develops a lumber neck after which it is destroyed and completely burned by incineration

3 While similar products are being sought and seized all other individuals who may have eaten the contaminated product are warned to seek medical advice and prophylactic therapy through injection of antitoxin as described under Immediate Care

Immediate Care

1 As soon as the diagnosis is suspected send an urgent call for antitoxin. While waiting test the patient and others who have ingested toxin for reactions to horse serum. Desensitize hyperreactors (p 4191).

2 Administer antihistamine for the combined purpose of prophylaxis in the event that serum is to be administered and also for sedation without danger to the respiratory mechanism. Inject 1% benadryl intramuscularly in the amount of 5 cc (50 mg) or give orally 100 mg of pyribenzamine or benadryl with repeat doses of 50 mg every three or four hours for the first day.

3 Instruct the patient to spit out saliva or provide with a saliva ejector as used in dentistry.

4 If the patient has been seen within a few hours of ingestion of the suspected product consider gastric lavage or induction of emesis by ipecac (p 1757). However if the patient swallowed the suspected food longer than twelve hours before the diagnosis has been made or if there are already evidences of paralysis avoid gastric lavage and emesis lest aspiration into the lungs be produced.

5 If the patient has been seen within six to eight hours following ingestion of the suspected food give a saline cathartic. Otherwise prefer an enema or a colon irrigation that will not so greatly fatigue and dehydrate the sufferer.

6 Deposit 100 000 units of crystalline penicillin G and 300 000 units of procaine penicillin G for prophylaxis in the event of an aspiration pneumonitis.

7 If there are beginning evidences of respiratory difficulty place the patient in an oxygen tent and provide for artificial respiration if needed.

8 If it is at all possible avoid sedatives, analgesics and opiates since these may further depress the respiratory center.

9 While awaiting the arrival of serum set up an intravenous drip if the patient is prostrated and/or dehydrated as the result of vomiting and diarrhea. Initially use 5% dextrose in saline.

10 When antitoxin arrives make a decision as to the wisdom of using heterologous serum. Weigh the severity of the illness against the degree of existing hypersensitivity.

For prophylaxis in the asymptomatic known to have ingested toxin give an initial intramuscular deposit of 2500 to 5000 units with 5 cc of 1% benadryl.

For active treatment set up an intravenous drip (p 3775). After prophylactic antihistamine (5 cc of 1% benadryl) infuse at least 100 000 units of botulinum antitoxin diluted to 500 or 1000 cc with 5% dextrose in isotonic saline solution. Follow serum by intravenous administration, through the drip of an additional dose of 5 cc of 1% benadryl. During the intravenous drip keep available another syringe with 2 cc of epinephrine chloride (1:1000) for introduction if evidences of anaphylaxis develop.

Continuing Care (Unfavorable Course)

1 Since toxin is destroyed within the body within the course of a few days continue all heroic efforts without interruption. If the life of the patient can be preserved for only a few days recovery is almost completely assured. Repeat antitoxin as previously described preceded and followed by antihistamine.

2 In the event of worsening conditions try to avoid panic medication that can only add to the patient's burden. Sedatives and opiates tend to increase respiratory depression and undue amounts of stimulants increase the patient's awareness of difficulties and add the elements of anxiety and fear.

3 Since the principal danger is respiratory depression place main reliance on oxygenation and artificial respiration (p 3766). Very little respiratory stimulation is accomplished by caffeine strychnine epinephrine or the sympathomimetic amines such as epinephrine etc. However if the course is progressively unfavorable try intravenous injections of 1 cc of metrazol (0.1 gm) or 3 cc of nikethamide (coramine).

BOUTONNEUSE FEVER

[Exanthematous Fever Eruptive Fever Marseilles Fever Fever of Conor and Bruch]

Principles of Diagnosis and Treatment

1 Boutonneuse fever (p 383) is a rickettsial disease resembling typhus fever (p 4621).

2 The disease is tick borne. It is characterized by an almost constant appearance of a maculopapular eruption of the palms and soles and a tache noire (black spot) usually at the site of the tick bite (p 383).

3 The causative agent *Dermacentor conorae* resembles *D. rickettsii*. The dog tick *Rhipicephalus sanguineus* is the principal if not the only vector of *D. conorae*.

4 Whereas guinea pigs recovered from Rocky Mountain spotted fever are solidly immune to boutonneuse fever spotted fever vaccine gives no protection against human boutonneuse fever. However an attack of boutonneuse fever confers an immunity of at least two months.

5 The Weil-Felix reaction occurs late in the course of the disease appearing at the end of the first or beginning of the second week of convalescence. It may be positive in equal titers for both *Proteus* OX 19 and OX 2. With purified washed rickettsial antigen boutonneuse fever may be differentiated from spotted fever by the complement fixation reaction.

6 After an incubation period of five to seven days the onset is usually sudden with chill and a rise in temperature often above 104° F. Usually at the time of onset there is a small ulcer about 2 to 5 mm in diameter with a black necrotic center surrounded by a darker redish area of variable dimensions. This probably represents the site of

the tick bite. Associated symptoms at onset are violent and persistent headache, lassitude, joint pains and coated tongue.

7 Three or four days after the onset a maculopapular eruption is seen spreading rapidly over the whole body but involving principally palms, soles and face.

8 After a febrile period of eight to fourteen days the temperature usually falls by rapid lysis. The case fatality rate is less than 3 per cent.

9 Because of its resemblance to typhus fever there is reason to believe that boutonneuse fever will respond specifically to aureomycin, chloramphenicol and para aminobenzoic acid.

Practical Management

Prophylaxis

- 1 No vaccine is currently available
- 2 Elimination of the dog tick removes the only known vector

Immediate Care

[See Typhus Fever]

BRONCHIAL ASTHMA

In the management of bronchial asthma the physician's urgent obligation is symptomatic relief of acute distress. During intervals of freedom from attack efforts are made to prevent recurrence by elimination of bacterial and nonbacterial sensitizing agents (p 4176), desensitization of hyposensitization with offending allergen (p 4180), psychotherapy (p 4180) and prophylaxis or palliation with antihistamines and adrenergics (p 4158).

Practical Management

Immediate Care

- 1 Order tablets of plain antihistamines such as pyribenzamine or benadryl in doses of 100 to 150 mg every two or three hours or combine with oral adrenergic as in histadyl ephedrine capsules
- 2 Spray with 1:100 epinephrine
- 3 If no response try sublingual administration of isuprel in doses of 10 to 15 mg. Caution the patient not to swallow tablet. Observe first dose carefully watching for toxic side effects such as tachycardia, elevation of blood pressure, etc.
- 4 Inject intramuscularly 2 to 5 cc of 1% benadryl (20 to 50 mg)
- 5 Deposit subcutaneously 0.2 to 0.5 cc of 1:1000 epinephrine hydrochloride noting sympathomimetic effect as above
- 6 Give a slow intravenous injection of 0.3 to 0.6 gm of aminophyllin
- 7 These efforts failing try intravenous introduction of 2 to 5 cc of benadryl made up to 20 cc with sterile saline or distilled water

8 Avoid expectorants sedatives opiates and atropine like drugs
Most asthmatics have marked drug idiosyncrasy and often develop serious untoward manifestations

9 Apply for ACTH which may be promptly effective

Continuing Care (Unfavorable Course)

- 1 Administer oxygen by mask method
- 2 Try intravenous injection of 0.5 to 1 cc of 1:10,000 epinephrine hydrochloride
- 3 If oxygen mask is ineffectual transfer patient to tent preferably equipped to deliver gas by positive pressure
- 4 If still refractory obtain helium oxygen mixture

Continuing Care (Progressively Unfavorable Course)

- 1 In desperation summon bronchoscopist for endoscopic lavage and aspiration of mucous plug
- 2 Try an intravenous infusion of 100 cc of 1% procaine diluted to 500 cc of normal saline or distilled water

Interval Treatment

Between attacks seek to eliminate offending allergen by providing an allergen free atmosphere hyposensitization or desensitization particularly in pollinoses climatic change or use of air conditioning and air filtration antibiotic treatment of bacterial foci and surgical elimination and drainage of accessible foci

BRUCELLOSIS

[Bang's Disease Malta Fever Mediterranean Fever Melitensis Rio Grande Fever Texas Fever Undulant Fever]

General Principles of Diagnosis and Therapy

1 Brucellosis is widely disseminated among domestic animals and particularly cattle pigs and goats The majority of human infections result from handling infected animals and from ingestion of food products that have not been properly processed The transmission of brucellosis from one human being to another is probably rare

2 Major responsibility for control of brucellosis rests with public health authorities These officials are faced with the same diagnostic problems as the practitioner Using presently available methods they can detect only a small percentage of the numbers of infected animals Then the diagnosis being established their only recourse is to sacrifice and slaughter livestock This gross method of attacking the problem cannot eradicate the vast reservoirs of brucellosis prevalent throughout the United States

3 Individual efforts at prophylaxis must be used to supplement

public health measures. Housewife and farmer can accomplish much by simple pasteurization of milk used for drinking purposes and for preparation of dairy product. Brucellosis is much more prevalent in rural districts where the farmer provides raw fresh milk for his own table and for local customers than in large urban communities where there is official public supervision of dairy products and compulsory pasteurization.

4. Diagnosis of brucellosis is rarely made. It is provided only by growth of organism from blood stream, sternal bone marrow tissue fluid or pus. *M. melitensis* grows best in tryptose phosphate broth with oxygen replaced by 10 to 20% carbon dioxide.

5. Whereas the bacteriologic diagnosis can be made in approximately 25 per cent of acute infections, it is exceptional to demonstrate the organism in the much more prevalent chronic types of invasion.

6. The presumptive diagnosis of brucellosis rests on clinical and laboratory data. The physician must detect the disease in every otherwise undiagnosed illness that comes within the scope of their observation. At the other extreme, those who have not been impressed by more recent knowledge of the extensive dissemination of the disease regard brucellosis as a rare and exotic infection.

7. Laboratory evidence of brucellosis rests on skin sensitivity, agglutination reactions, opsonocytophagocytic index and blood counts. Skin sensitivity is best detected by using commercially available brucellergen (Sharp & Dohme) marketed in vials which must be refrigerated when not in use and thoroughly shaken prior to withdrawal of fluid. The test is performed by injection of 0.1 cc intradermally on the flexor surface of the forearm. The positive reaction is a circumscribed erythema with edema and induration varying in diameter from 2 to 10 cm and persisting for as long as seven days (Fig. 45, p. 318). The official reading is made at the end of forty-eight hours, at which time an erythema exceeding 2 cm in diameter may be considered indicative of sensitivity to *M. melitensis* protein.

8. In addition to the local reaction, the intradermal test may provoke a systemic response including elevation of rectal temperature, reading above the pre-test level and exacerbation of focal manifestations.

9. The presence of a positive reaction indicates merely that the individual has become sensitized to the protein of the organism. It does not mean necessarily that he suffers from the disease or that the presenting symptoms during the current illness are in any way related to skin sensitivity.

10. Before skin sensitivity is tested, withdraw blood for serologic reactions. Regard an agglutination titer in excess of 1:100 with high suspicion, particularly if reaction is done with antigen supplied by Bureau of Animal Industry. Of greatest significance is a rising titer associated with use of vaccine or repeated skin tests.

11. The agglutination reaction is not oracular. The test is often negative in acute phases of disease and in many who have long suffered from chronic brucellosis. A high titer may be misleadingly present in

those who have had the disease and recovered and who at the time of the testing are not necessarily suffering as the result of previous infection

12 Cross agglutinations may be caused by prophylactic vaccination with cholera vibrio

13 As in the case of all other laboratory data the agglutination test requires interpretation in terms of clinical phenomena The association of a rising titer with skin sensitivity and clinical manifestations consistent with the presence of the disease furnishes strong presumptive evidence that the patient suffers from an invasion by *Brucella abortus* or one of the members of its bacterial family

14 The opsonocytophagocytic index is difficult to determine and results are unreliable

15 Of some presumptive diagnostic evidence is the presence of leukopenia with relative lymphocytosis

16 Clinical manifestations of brucellosis are as varied as those of tuberculosis (p 314) Acute brucellosis may occur as a generalized systemic invasion simulating influenza or typhoid fever Under these circumstances it may or may not be characterized by remissions and exacerbations described as characteristic of undulant fever Systemic manifestations may give way to evidences of localization in skeletal system (p 314) digestive system (p 315) central nervous system (p 315) respiratory system (p 316) endocardium or reproductive system (p 316)

17 Acute brucellosis may terminate uneventfully but most often it passes into the chronic phase The latter may or may not have been preceded by demonstrable acute invasion

18 *Chronic* brucellosis is even more ill-defined than the acute form It may be characterized by such vague symptoms that the patient is classified as a neurasthenic or its course may be punctuated by exacerbations involving any of the systems to which reference was previously made Thus some clinicians credit chronic brucellosis as the etiologic mechanism in many otherwise ill-defined clinical entities calling attention to the high incidence of skin sensitivity in patients with multiple sclerosis Others assume that brucellosis is probably an etiologic factor in uveitis

Practical Management

Immediate Care

1 Treat acute brucellosis according to the general principles established for the management of a generalized infection (p 68) Chronic brucellosis may be handled in an ambulatory manner

2 In acute brucellosis give an immediate priming dose of aureomycin or chloramphenicol approximating 50 to 100 mg per kilogram of body weight (3.5 to 7 gm for the average adult weighing 150 pounds)

3 For synergistic effect supplement aureomycin or chloramphenicol with streptomycin Inject intramuscularly 1 or 2 gm of streptomycin for the initial dose

4 In chronic brucellosis begin with exceedingly small doses in order to avoid Herxheimer like reactions Start with 25 mg four times daily on the second day increase to 150 mg four times daily, on the third day to 400 mg four times daily on the fourth day to 500 mg four times daily on the fifth day to 1 gm four times daily and on the sixth day to the full amount of 1.5 gm four times daily to total 6 gm or 24 capsules each containing 250 mg of aureomycin or chloramphenicol

Continuing Care (Favorable Course)

1 In acute brucellosis continue with aureomycin or chloramphenicol and streptomycin for a minimum period of two weeks Because of the tendency of brucellosis to be recurrent or chronic it is perhaps better to extend the treatment course for three weeks Request the patient to return after a few months for re treatment if necessary

2 Continue treatment in chronic brucellosis with aureomycin or chloramphenicol supplemented by streptomycin, for a minimum period of three weeks Have the patient report again at the end of three months if all is well Consider re treatment for prevention of recurrence or exacerbation

Continuing Care (Unfavorable Course)

1 If the patient is intolerant of aureomycin substitute chloramphenicol or terramycin in somewhat larger dosage

2 If the patient is intolerant of streptomycin substitute dihydrostreptomycin or neomycin in somewhat larger dosage

3 With continued signs of infection or recurrence, add sulfonamides to the combination of oral administration of aureomycin or chloramphenicol and of intramuscular injections of streptomycin Give a loading dose of 2 gm each of sulfadiazine and sulfamerazine with 4 gm of bicarbonate of soda Maintain sulfonamide levels by daily doses of 0.5 gm of each every four hours for at least two weeks and preferably longer Watch for evidences of drug toxicity or idiosyncrasy by clinical observation urine analysis and repeated blood counts

4 Made obsolete by successful antibiotic therapy are brucellosis antibacterial heterologous serum (prepared by Foshay from horses) convalescent human homologous antibrucellosis serum and the various commercially available brucella vaccines (Lederle Pibman Sharp & Dohme National Drug) These last are suspensions containing 2000 million organisms per cc Presently useless for curative purpose they still possess value for preventive inoculation

CAMOQUIN

Camoquin is a synthetic antimalarial with the formula 4 (7-chloro-4-quinolylamino)-alpha-diethylamino-ortho-cresol

Available Products

Tablets containing 50 mg For experimental use only

Therapeutics

In vivax malaria fever and peripheral blood parasites disappear after third or fourth treatment-day. In falciparum malaria fever disappears on third to fifth day; asexual parasites disappear between second and fourth days and sexual parasites between ninth and nineteenth days.

Caroquin seems to have slight or no influence on crescent forms but it has a decided effect on vivax gametocytes and on asexual forms of vivax and falciparum.

Toxicology

Caroquin has no undesirable secondary effects.

CANICOLA FEVER

Canicola fever is a leptospirochetosis transmitted by dogs. It closely resembles spirochetal jaundice and is managed similarly, placing main reliance on penicillin.

CARINAMIDE (STATICIN)

[Caronamide]

Carinamide (staticin) (4 carboxy phenylmethanesulfonanilide) is a white crystalline powder sparingly soluble in water.

Available Products

Staticin Carinamide Tablets (Sharp & Dohme) 0.5 gm.

Pharmacology

Carinamide was introduced in 1947 for the purpose of maintaining high and sustained blood levels of penicillin through the production of a temporary renal blockade.

In its elimination through the kidneys 80% of penicillin passes through the tubules and 20% through the glomeruli. By competing with penicillin for combination with the enzyme responsible for tubular excretion of antibiotic, carinamide blockades the principal renal excretory mechanism. As a result penicillin blood levels are increased three or fourfold and prolonged in approximately the same ratio.

The renal blockade produced by carinamide is reversible. Following elimination of enzyme compound the enzyme is freed and thenceforth transports penicillin through the tubular epithelium according to the normal pattern of renal elimination. In doses sufficient to suppress tubular elimination of penicillin, carinamide has no significant effects on heart respiration, blood pressure or renal volume.

Despite the advantages of carinamide, newer repository penicillins

4 In chronic brucellosis begin with exceedingly small doses in order to avoid Herxheimer like reactions. Start with 25 mg four times daily on the second day increase to 150 mg four times daily on the third day to 400 mg four times daily on the fourth day to 500 mg four times daily on the fifth day to 1 gm four times daily and on the sixth day to the full amount of 1.5 gm four times daily to total 6 gm or 24 capsules each containing 250 mg of aureomycin or chloramphenicol.

Continuing Care (Favorable Course)

1 In acute brucellosis continue with aureomycin or chloramphenicol and streptomycin for a minimum period of two weeks. Because of the tendency of brucellosis to be recurrent or chronic it is perhaps better to extend the treatment course for three weeks. Request the patient to return after a few months for re-treatment if necessary.

2 Continue treatment in chronic brucellosis with aureomycin or chloramphenicol supplemented by streptomycin for a minimum period of three weeks. Have the patient report again at the end of three months if all is well. Consider re-treatment for prevention of recurrence or exacerbation.

Continuing Care (Unfavorable Course)

1 If the patient is intolerant of aureomycin substitute chloramphenicol or terramycin in somewhat larger dosage.

2 If the patient is intolerant of streptomycin substitute dihydrostreptomycin or neomycin in somewhat larger dosage.

3 With continued signs of infection or recurrence add sulfonamides to the combination of oral administration of aureomycin or chloramphenicol and of intramuscular injections of streptomycin. Give a loading dose of 2 gm each of sulfadiazine and sulfamerazine with 4 gm of bicarbonate of soda. Maintain sulfonamide levels by daily doses of 0.5 gm of each every four hours for at least two weeks and preferably longer. Watch for evidences of drug toxicity or idiosyncrasy by clinical observation, urine analysis and repeated blood counts.

4 Made obsolete by successful antibiotic therapy are brucellosis antibacterial heterologous serum (prepared by Foshay from horses), convalescent human homologous antibrucellosis serum and the various commercially available brucella vaccines (Lederle, Pitman, Sharp & Dohme, National Drug). These last are suspensions containing 2000 million organisms per cc. Presently useless for curative purpose they still possess value for preventive inoculation.

CAMOQUIN

Camouquin is a synthetic antimalarial with the formula 4-(7-chloro-4-quinolylamino)-alpha-diethylamino-ortho-cresol.

Available Products

Tablets containing 50 mg. For experimental use only.

- 3 At roll call the next morning administer a third prophylactic dose This routine affords protection against chancroid and gonorrhea but not against other venereal diseases (p 4351) It will not mask a syphilitic invasion

Immediate Care

- 1 For specific anti-infective therapy the practitioner has the choice of sulfonamide streptomycin or aureomycin chloramphenicol for the cure of chancroid Either of the last named is distinctly preferable since each is absorbed orally and lacks significant toxicity By contrast sulfonamide has potential toxicity and streptomycin requires hypodermic administration

- 2 If sulfonamide is used prescribe an initial dose of 2 gm each of sulfadiazine and sulfamerazine with 1 teaspoonful of sodium bicarbonate For maintenance doses order 0.5 gm each of sulfadiazine and sulfamerazine every four hours for three days Thereafter prescribe 0.5 gm of each every six hours for two weeks unless toxic manifestations develop Urine examinations and blood counts are made at least twice weekly during sulfonamide administration

- 3 Streptomycin therapy requires intramuscular injections of 0.5 gm every six hours for five days This routine virtually precludes ambulatory treatment

- 4 Except on grounds of economy aureomycin chloramphenicol therapy constitutes the method of choice Oral doses of 500 mg (2 products) are given immediately Maintenance doses of a single product (250 mg) 4 times daily for two weeks suffice to give almost 100 per cent cure with negligible toxicity Sulfonamide therapy has the single advantage that it is less expensive

- 5 Local treatment is aimed primarily at cleanliness and avoidance of masking the hard chancre (Fig 48 p 335) The parts are merely cleaned with soap and water If necessary the preputial cavity is irrigated with saline solution or with potassium permanganate of a strength no greater than 1:8000

- 6 In the event that the inguinal bubo becomes sore and tense aspiration is performed when the lesion becomes fluctuant Incision however is not advised

- 7 For prophylaxis of possible coincidental syphilis the patient receives at least 6 000 000 units of penicillin Crystalline procaine penicillin G suspended in oil with 2% aluminum monostearate is deposited intramuscularly over a span of ten days according to the convenience of patient and physician If the patient can be seen daily 600 000 units are injected at each visit

- 8 Approximately six weeks after the chancroidal lesion is healed the patient returns for a follow-up visit at which time serological tests for syphilis are repeated

- 9 At the end of another six weeks or three months after acquisition of the infection tests are again repeated and the patient is circumcised if necessary

(and especially the salt of crystalline procaine penicillin G) renders obsolete the method of renal blockade. It is unlikely that carinamide will be retained for clinical use except in serious exigencies when less cumbersome methods have failed.

Toxicology

Occasionally carinamide produces nausea and vomiting. These symptoms are minimized by crushing tablets and administering them with food or alkali. On rare occasions carinamide has produced drug fever and a toxicoderm. A reducing substance that is not glucose may be noted in the urine.

Carinamide does not effect the excretions of streptomycin or sulfonamides. Its utility is limited completely to its effect on penicillin.

CHANCROID

[Soft Chancre]

Principles of Diagnosis and Treatment

- 1 The diagnosis of soft chancre is usually made clinically (p 288).
- 2 For confirmation spreads prepared from lesions are stained with methyl green pyronin (Pappenheim). They reveal *H. ducreyi* as a small ovoid rod, free or within phagocytes, arranged in pairs or groups.
- 3 Available also is the Ito-Reenstierna skin test (Fig 41B, p 289) made with 0.1 cc. Lederle Ducrey Antigen (p 4206).
- 4 Despite confirmation of *H. ducreyi* as the etiologic agent in the production of the venereal ulcer, the practitioner must suspect simultaneous or coincidental infection with *Tr. pallidum* of syphilis (p 331). The incubation of soft chancre may be as brief as three days, whereas the hard chancre may not appear for several weeks during which time serologic tests are completely and misleadingly clear (p 337). The patient who acquires a chancroidal and a syphilitic infection at a single exposure may be cured of the lesser infection before the graver invasion becomes manifest.
- 5 *H. ducreyi* is sensitive to sulfonamide, streptomycin, aureomycin, and chloramphenicol.

Practical Management

Prophylaxis

In military establishments the incidence of chancroidal infection has been diminished from 52 to 6 per thousand by institution of the following routine:

- 1 On issuance of the overnight pass, give each soldier 2 gm. of sulfadiazine or sulfamerazine.
- 2 On return to quarters, repeat dose.

4 Nonsuppurative encephalomyelomeningitides (p 442) are infrequently observed following varicella although Van Bogaert reports 64 instances occurring over a span of eighteen years. Quite possibly the complication is a hypersensitivity phenomenon. Because of its gravity and unpredictability consider prophylactic antihistamine therapy using daily doses of 200 mg of pyribenzamine or benadryl particularly in those with known allergy.

CHLORAMPHENICOL

[Chloromycetin]

Chloramphenicol is a potent antibiotic isolated in nature from cultures of *Streptomyces venezuelae*. The formula of chloramphenicol D () threo 1 p-nitrophenyl 2 dichloroacetamido 1 3 propanediol reveals several unique features: it is the first compound containing a nitro group (NO_2) or a dichloroacetic acid residue (OOCCHCl_2) to occur free in nature and it is the first major antibiotic to be synthesized on a practical scale. Natural and synthetic chloramphenicols are identical in chemical, physical and clinical properties.

Available Products

Kapseals Chloromycetin (Parke Davis) 250 mg

Suppository in water soluble base for rectal insertion in infancy and childhood particularly and for adults with gastric intolerance or inability to swallow.

Bacterial Spectrum

The bacterial spectrum of chloramphenicol is almost identical with that of aureomycin (p 4242). Quantitative variations occur as for example the greater sensitivity of typhoid and salmonellae (paratyphoid) to chloramphenicol and of gram negative cocci and brucellae to aureomycin. These differences however are minor compared to the close parallelism that exists between the two in most other respects.

Pharmacology

Chloramphenicol is presently available only for oral administration and rectal insertion. The latter route may be used by introducing punctured capules or a water soluble suppository base. After an effectual dose maximum blood levels are reached at the end of two hours. Levels steadily decline until after eight hours none is detectable. Urine levels are appreciable at two hours but decline rapidly over the course of the next ten hours. With blood levels of 15 micrograms per cc the concentration of chloramphenicol in spinal fluid reaches 4 to 12 micrograms within three hours.

CHENOPODIUM, OIL OF (NF)

Oil of chenopodium previously was used extensively as an anthelmintic in ascariasis and trichuriasis. Because of its toxicity it has been mostly superseded by hexylresorcinol and tetrachlorethylene.

Available Product

Oil of Chenopodium NF 0.3 or 0.6 cc

Therapeutics

When given for anthelmintic effect the undernoted routine is suggested:

- 1 For one week preceding treatment take full diet avoiding alcohol and fats
- 2 On the night before treatment take a saline purge
- 3 On the morning of treatment administer 0.6 or 0.9 cc of oil of chenopodium with a glass of milk
- 4 Repeat the dose once or twice at half hour intervals to total 1.2 to 2.7 cc
- 5 Two hours after the last dose repeat the saline purge

Toxicity

See p 1896

CHICKENPOX

[Varicella]

Principles of Diagnosis and Treatment

The virus of chickenpox is a filtrable organism which appears resistant to antibiotics. Fortunately the disease is self limited and rarely has significant complications other than an occasional encephalitis (p 4307).

Practical Management

1 No specific antibiotic therapy is available for the prevention or cure of chickenpox (Fig 67 p 421). Vaccination with material from lesions has not proved effectual. Injection of gamma globulin is wasteful. Intramuscular deposits of 15 to 20 cc of convalescent serum require efforts not warranted in routine practice.

2 While it is not recommended that children be exposed deliberately to chickenpox, no great effort should be expended to prevent the disease. As a matter of fact the long incubation period makes prophylactic measures as useless as they are impractical.

3 Protect children with weakened resistance from secondary infection of vesicles by daily intramuscular injections of 100,000 units of crystalline procaine penicillin G in aqueous suspension or by addition of 50,000 units of penicillin G four times daily to milk soup or sweetened drinks.

CHLORGUANIDE HYDROCHLORIDE

[Guanatol Hydrochloride^a Paludrine SN 12837]

Chlorguanide a synthetic antimalarial with the formula N_1 (p chloro phenyl) N_{31} opropylbiguanide is available as a white odorless and slightly bitter powder and shares with chloroquine the distinction of being currently the best and the least toxic antimalarial (p 4397)

Available Products

Chlorguanide Hydrochloride Tablets N N P (Abbott) 100 and 300 mg

Guanatol Hydrochloride Tablets (Lilly) 25 50 and 100 mg

Pharmacology

After oral doses approximately 60% of chlorguanide is absorbed with maximum plasma concentrations in approximately two hours Following absorption chlorguanide localizes in tissues to only a slight degree but it does not tend to accumulate except when given in lethal doses

Chlorguanide must undergo some metabolic alteration in the body since excretion by feces and urine is incomplete Approximately 10% of the oral dose appears in the stool and 20 to 30% in the urine Despite the fact that only 30 to 40% of the total oral dose is thus accounted for tissue accumulation does not occur It must be concluded that some alteration of the nucleus occurs within the body

In man the minimum effective plasma level is probably less than 1 microgram per 100 cc Doses as small as 50 mg twice daily give a plateau concentration between 5 and 15 micrograms per 100 cc so that relatively small quantities of the drug are required for effectual action

Toxicology

Therapeutic doses of chlorguanide produce no significant toxic manifestations or untoward side reactions in man Larger doses such as 1 gm daily used for investigational purposes may cause vomiting epigastric pain hematuria and esophageal spasm

Therapeutics

Chlorguanide is the only causal prophylactic available in malaria Unfortunately this extraordinary therapeutic effect does not hold for all malarial parasites but can be demonstrated only for *P. falciparum* (malignant tertian) This property makes chlorguanide first choice in the causal prophylaxis and radical cure of *falciparum malaria* It is useful also in vivax malaria (benign tertian) where it controls acute attacks and suppresses relapses In vivax malaria chlorguanide is not as effective as chloroquine or quinacrine to which it yields preference

The antimalarial activity of chlorguanide in *falciparum* and vivax malaria may be summarized as follows

Toxicology

No important symptoms or signs of toxicity have been observed thus far as the result of chloramphenicol administration. An occasional patient develops nausea and vomiting but this is infrequent and transitory as compared to aureomycin (p 4242).

Antitherapeutic Devices

So far as is presently known chloramphenicol is conspicuously free from Antitherapeutic devices (p 4131). Bacterial fastness (p 4132) has not yet been encountered. Acute histamine type hypersensitivities (p 4168) are infrequent and chronic tuberculin type manifestations (p 4169) have not been reported.

Therapeutics

The wide bacteriologic spectrum indicates the broad effectiveness of chloramphenicol (p 4242). Because of their close parallelism a single chart has been prepared to suggest joint indications for aureomycin and chloramphenicol (p 4243). As has been previously intimated the two antibiotics may be used interchangeably except in typhoid fever, shigellosis and salmonellosis where chloramphenicol is distinctly the preparation of choice and in gram negative invasions and brucellosis where aureomycin is patently superior. In point of fact future experience may reveal the wisdom of combining both anti-infective agents in the manner in which various sulfonamides are presently administered (p 4541).

Dosage

Dosage schedules for aureomycin are applicable also to chloramphenicol. In general hyperacute infections require a heavy loading dose of 50 to 100 mg per kilo (approximating 3.5 to 7 gm for the average adult weighing 150 pounds) in chronic low grade infections as little as 25 to 60 mg per kilo suffice for the priming or loading dose (2 to 4 gm for the average adult weighing 150 pounds).

Maintenance doses in general average 1 or 2 capsules (250 to 500 mg) every three, four or six hours depending on the severity of initial symptoms and the therapeutic response. Following acute phases of the disease and defervescence it is suggested that maintenance doses be continued for several days to prevent relapse or recrudescence.

Comparison with Other Antibiotics

Like aureomycin chloramphenicol may be given with penicillin, sulfonamides and streptomycin for broader coverage of the bacterial spectrum in Probatory and Desperation Anti-infective Therapy.

The choice between chloramphenicol and aureomycin is based on trivial differences for the most part (p 4242). When in doubt the practitioner may wisely decide to use both preparations each in half the dosage indicated in afore-mentioned schedules.

CHLOROQUINE DIPHOSPHATE N.N.R.

[Aralen Schöchin Pesochin S N 7618]

A potent and relatively non toxic all purpose antimalarial and amebicide with the formula 7-chloro-4(4-di-ethylamino-1-methylbutylamino)quinoline diphosphate

Available Product

Aralen Diphosphate N N R Tablets (Winthrop) 250 mg

In addition to commercially available tablets intramuscular injections of 0.2 gm. in 5 cc. of sterile aqueous solution have proven effective in vivax and falciparum malaria

Pharmacology

Chloroquine possesses more than 8 times the cumulative potency of quinine. It is more than 3 times as active as quinacrine.

Therapeutics

Chloroquine is highly active against erythrocytic forms of *P. vivax* and *P. falciparum*. With chlorguanide it is the best and least toxic all purpose antimalarial.

In falciparum malaria it abolishes the acute attack and effects a complete cure though it yields to chlorguanide as the preparation of choice since the latter is also a causal prophylactic.

Chloroquine is the preferred drug in the treatment of vivax and quartan malaria. In these infections it is not prophylactic but it is suppressive and lengthens the span between treatment and relapse. In the management of vivax relapses however it yields to the combination of pentaquine and quinine (p. 4398). For more rapid antipyretic effects in hyperacute malarias quinine is more effective.

In the malarial infections the principal action of chloroquine is on endo-erythrocytic forms namely trophozoites and schizonts.

Chloroquine is also useful as an amebicide. It is effectual against both intra-intestinal and extra-intestinal forms but particularly the latter. Therefore it may well replace the more toxic emetine (p. 529).

Dosage

Suppression of vivax malaria 500 mg. (2 tablets) twice a week

Treatment of acute vivax or falciparum malaria Initial dose of 1 gm. (4 tablets) followed by 0.5 gm. at 6, 24 and 48 hours to total 2.5 gm. (10 tablets)

Prophylaxis of amebiasis 250 mg. twice a week

Treatment of amebiasis 250 mg. twice daily for two to three weeks

Toxicity

Chloroquine is well tolerated in therapeutic doses. On rare occasions there may be mild headache, itching, visual and gastro-intestinal dis-

- (a) By destruction of pre erythrocytic forms of *P. falciparum* it produces radical cure of acute attack it accomplishes causal prophylaxis in that the patient remains symptom free after discontinuance of the drug it prevents mosquito transmission of *P. falciparum* infection within a few hours after the oral dose is administered
- (b) In vivax malaria chlorguanide terminates the clinical attack by its action on asexual erythrocytic forms (early schizonts) but parasites reappear after discontinuance of the drug Hence in vivax malaria though chlorguanide effects cure of the acute attack and suppresses activity while the drug is being administered it is not a causal prophylactic Seizures reappear once the drug has been discontinued and mosquito transmission through bite of the patient during therapy is not prevented as in the case of *P. falciparum* infections

Dosage

For causal prophylaxis of *P. falciparum* 300 mg twice weekly

For active treatment of falciparum malaria 100 mg 3 times daily for ten days Thereafter for suppression 300 mg twice weekly

For active treatment of vivax malaria 100 mg 3 times daily for two to three weeks Thereafter suppressive doses of 100 mg thrice weekly for six months For treatment of relapsing vivax malaria prefer pentaquine quinine combination (p 4398)

CHLOROPHYLL

Soluble derivatives of chlorophyll accelerate healing stimulate tissue growth and cell metabolism inhibit anaerobic proteolytic bacterial growth aid in controlling superficial infection and deodorize foul wounds

Available Products

Chloresum ointment (Rystan) *chloresum solution* (Plain) *chloresum solution* (Nasal) *chloresum solution* (aerosol) for use with penicillin and other antibiotics *chloresum dental ointment*

Therapeutics

For local application to wounds ulcers fistulas burns sinuses amputation stumps tooth sockets etc. as nasal spray or aerosol with penicillin or other antibiotics

The use of chloresum aerosol solution instead of physiological saline solution as diluent for penicillin results in higher antibiotic levels due in part to inhibition of penicillinase as by chlorophyll

6 Since protection from cholera vaccine requires at least ten days for development of an effectual active immunity prescribe soluble sulfonamide (sulfadiazine or thalamyd in doses used for Continuing Care) to sterilize intestinal content while antibodies are developing

Immediate Care

1 Because of the gravity of the disease inaugurate therapy in cholera by intravenous medication Set up an intravenous drip and inject sodium sulfadiazine and/or aureomycin hydrochloride Of the former give a priming dose of 5 gm followed by no less than 500 cc of physiologic saline and 500 cc of plasma If the patient has been depleted by fluid loss through vomiting and diarrhea continue intravenous drip for introduction of fluid saline plasma and antibiotic

2 If aureomycin is used introduce 500 mg in 0.75% sodium carbonate

Continuing Care (Favorable Course)

1 For continuing care the practitioner has choice of oral sulfadiazine sulfaguandine thalamyd preparation 6257 aureomycin or chloramphenicol

2 Concerning the various sulfonamides there is a difference of opinion among experts concerning aureomycin and chloramphenicol there is insufficient experience for expression of any dogmatic opinion

3 As to sulfadiazine Indian authorities report no appreciable effect yet participants in a symposium on the treatment of cholera agreed that given early in the disease sulfadiazine with intravenous infusions of plasma may be depended on to be 100 per cent effective in assuring the recovery of the patient If the practitioner decides to continue sulfadiazine after the intravenous priming dose he may inject intravenously 2.5 gm of the sodium salt once or twice daily depending on the course of the disease and the patient response If the stomach is tolerant he may give 1 gm four times daily with sodium bicarbonate

4 Those Indian medical authorities who had such unfavorable experiences with sulfadiazine concluded that sulfaguandine was of considerable value In their experience administration of insoluble sulfonamide reduced gross mortality from 75 to 37 per cent If the practitioner decides to supplement the intravenous priming dose of sodium sulfadiazine with insoluble sulfonamide the oral dose approximates 4 gm for the first dose (8 tablets each of 0.5 gm) Thereafter the daily maintenance dose is the equivalent of the initial dose given in four divided portions of 2 tablets each (1 gm)

5 For oral control of cholera other experts recommend the immediately soluble thalamyd (phthalylsulfacetamide Schering) given orally in the amount of 0.2 gm per kilogram of body weight This requires the average adult weighing 150 lbs to swallow 28 tablets each containing 0.5 gm Thereafter the dose may be decreased to 6 or 9 gm daily (12 to 18 tablets) or 2 or 3 tablets every four hours

6 English investigators have experimented with preparation 6257,

turbances Occasionally patients notice blurring of vision and difficulty in focusing None of these side reactions are serious and all are reversible

CHOLERA

[Asiatic Cholera]

General Principles of Diagnosis and Treatment

With effective use of measures already in the possession of public health authorities epidemics of cholera can be eliminated For the afflicted therapeutic measures of great potential specific efficacy are available

Practical Management

Prophylaxis

1 General measures for the prevention of cholera require vigorous action on the part of public health authorities In addition each householder and physician strives for individual protection through a combination of hygienic and anti infective measures

2 During threatened or actual epidemic of cholera local health authorities are faced with a formidable problem Sources of water supply are pinked with a sufficient amount of potassium permanganate strict isolation is required for the afflicted who preferably are transferred to public institutions contacts and households of known sick are placed out of bounds clothes linen and mattresses used by the afflicted must be destroyed or sterilized and excreta chlorinated

3 In the individual household the following general hygienic measures are introduced to protect members of the family

- (a) Screen windows and doors
- (b) Use an insecticide such as DDT aerosol bomb (p 4377) to kill flies and other insects
- (c) Thoroughly boil water whether used for drinking cooking or washing
- (d) Do not use and serve foods that have been handled Rely on canned goods exclusively and boil these before serving
- (e) Insist that every member of the household scrub hands thoroughly after urination and defecation

4 Give each member of the household and of community prophylactic vaccination with a preparation of V comma USP (Lilly) (1 cc contains 8 billion killed organisms) For those who have not been previously protected inject an initial dose of 0.5 cc subcutaneously After seven to ten days give a second injection of 1 cc Thereafter deposit a booster dose of 1 cc every six months while the individual continues to live in an area where cholera is endemic or epidemic

5 Contacts who have had previous cholera inoculations within the past six months require only the booster dose of 1 cc on fresh exposure

CHOREA

[St Vitus Dance]

Principles of Diagnosis and Therapy

1 Regard chorea as a cerebral form of rheumatic fever in which encephalitic lesions result from obliterating endarteritis

2 In addition to classical chorea rheumatic encephalitis may produce bizarre neuropsychiatric manifestations including hallucinations phobias panic like episodes delirium increased psychomotor activity restlessness muscle twitchings and convulsions

3 In some instances manifestations of rheumatic encephalitis resemble those of schizophrenia (p 1364) As a further suggestion of the possible identity of the two syndromes evidences of endocarditis were found at autopsy in 64 per cent of a group of patients who died in a hospital for mental disease

4 Treat the patient with chorea in the manner of one suffering from classical rheumatic fever (p 4493) Particularly withhold salicylates partially because they have been found to be of no benefit in the treatment of rheumatic encephalitis and chorea and additionally because the delirium that occurs as a manifestation of salicylism confuses the clinical syndrome

CHROMOBLASTOMYCOSIS

[Verrucous Dermatitis]

Principles of Diagnosis and Treatment

1 Chromoblastomycosis is a fungus disease which usually presents only local cutaneous manifestations (Fig 970 p 3315) Only rarely have systemic lesions been observed

2 Diagnosis is established by identification in spreads and cultures from the lesion of the etiologic agents *Hormodendrum pedrosoi* *Hormodendrum compactum* or *Phialophora verrucosa*

Practical Management

Immediate Care

1 Attempt surgical excision if lesion can be totally extirpated without producing disturbances of function or excessive scarring

2 Reserve electrocoagulation for destruction of areas not amenable to surgical excision

3 Treat extensive cutaneous lesions that cannot be excised surgically or destroyed by electrocoagulation by iontophoresis using copper sulfate After protecting normal skin areas with petrolatum immerse involved extremity in a bath of 1% copper sulfate Place negative electrode on arm and positive electrode in solution Pass galvanic current of 25 ma through bath daily for thirty minutes After nine weeks increase to 10 ma

a sulfonamide containing two parts of sulfathiazole and three parts of formaldehyde. This new product with the formula $C_2H_{10}O_6N_6S_4$ is not yet commercially available. When used it may be prescribed in an initial dose of 10 gm on the first day, 4 to 6 gm on the second day, 4 gm on the third day, 2 gm on the fourth day, and 1 gm thereafter for three to seven days until a total of 25 to 30 gm has been administered. Following this routine 82 to 85 cholera patients survived recovery occurring within seventy two hours.

7 Introduction of aureomycin or chloramphenicol may resolve conflicting opinions concerning sulfonamides and simplify procedure. If an intravenous loading dose of aureomycin hydrochloride has been given the patient may then receive maintenance doses approximating 100 mg per kilogram of body weight per day (7 gm or 28 capsules for the average adult weighing 150 lbs). To accomplish this with minimum gastric discomfort 2 capsules are swallowed every few hours with an abundant quantity of milk, soup, ice cream or fruit juice.

8 If there is gastric intolerance to aureomycin substitute chloramphenicol.

9 No matter which antibiotic is chosen continue specific therapy for at least three afebrile days.

10 The use of antibiotics alone is not sufficient to overcome the ravages of cholera. Many symptoms of the disease are due to dehydration and salt deficiency. The syndrome of papain is caused by a barium containing salt which produces paralysis of muscle simulating periodic family paralysis (Amer J Med Sci 214 155 1947). The physician is required to maintain fluid and electrolyte balances by intravenous introduction of saline and plasma particularly if there is considerable vomiting and diarrhea.

At the same time fluid loss must be prevented. Diarrhea is controlled by deodorized tincture of opium administering 0.5 to 1 cc orally with each evacuation. If the stomach is not tolerant dramamine merits trial in doses of 100 mg every three or four hours.

As soon as the stomach is tolerant resume oral fluids using boiled water, tea, soup and boiled milk to tolerance.

Continuing Care (Unfavorable Course)

1 With continued difficulty the practitioner sets up a continuous intravenous drip.

2 For maintenance of metabolic requirements introduce at least 1000 cc more fluid than the calculated amount of vomitus and diarrheal excrement. For the intravenous fluid use 5% dextrose in saline or distilled water, 500 cc of plasma and 500 cc of whole citrated blood.

3 For anti-infective action inject 2 gm of sodium sulfadiazine or sodium sulfamerazine diluted with 200 cc of physiologic saline and 500 mg of aureomycin hydrochloride.

4 Continue the drip alternating blood, serum, dextrose in saline, soluble sulfonamide, aureomycin, sedative and opiate according to need.

observed also in Chinese inhabitants of the United States Cuba and Hawaii (p 1982) The diagnosis is established by identification of ova in stools (Table 191 p 3732)

2 In four patients recently discovered in New York City gentian violet (methylosamine chloride) in 1½ hour enteric-coated tablets proved clonorchicidal in doses of 60 to 120 mg given thrice daily for three weeks Chloroquine was found ineffectual

3 Reserve intravenous injections of freshly prepared sodium antimony tartrate (2%) for patients showing symptoms of sufficient severity to warrant the discomforts and hazards of antimony therapy (p 4224) As an initial dose give 60 mg (3 cc of 2% solution) If there are no untoward manifestations double the dose and repeat every second day until a total of 1.3 to 1.8 gm (65 to 90 cc of 2% solution) has been delivered

COCCIDIOIDOMYCOSIS

[Valley Fever Desert Rheumatism San Joaquin Valley Fever Posadas Wernicke Disease Coccidioidal Granuloma]

Principles of Diagnosis and Treatment

1 As the result of intensive training courses in desert country during World War II and of vast increase in motor travel particularly through Southern California there has been a wide dissemination of coccidioidomycosis in the United States Endemic areas of the disease exist in west Texas southern New Mexico southern and central Arizona southwestern Utah southern Nevada and in the valleys of southern California

2 Many who acquired the disease in endemic foci have returned to their homes so that there is no locality in the United States in which coccidioidomycosis may not be encountered The disease merits consideration in the diagnosis of chronic arthropathies (p 2802) and chronic pneumonitis (p 404) In pulmonary infections coccidioidomycosis is especially suspected when there are associated cavitations and calcifications when tubercle bacilli are not demonstrable and most especially when tuberculin and histoplasmin tests are negative (Fig 505 p 2212)

3 The diagnosis of coccidioidomycosis is established by isolation of the fungus from cutaneous lesions and from biopsy of skin or lymph nodes tissue or sputum cultures (Fig 75 D p 486)

4 A presumptive diagnosis may be suggested by noting skin sensitivity to intracutaneous injections of coccidioidin (p 501) obtainable from the Veterans Administration or from Dr John Kessel of The Los Angeles County General Hospital Los Angeles (33) California

Skin sensitivity tests for coccidioidomycosis are carried out in the same manner as tuberculin tests Patients with systemic manifestations are first injected with a 1:1000 dilution and a reading is made at the end of forty eight hours In the presence of a negative response the

4 Try roentgen radiation on resistant lesions that do not respond to measures previously outlined

5 Although iodide has been used orally as the saturated solution of potassium iodide (p 4377) and intravenously (1 gm sodium iodide daily) most experts have little confidence in the effect of the preparation. The Military Medical Manual of Tropical Medicine published under the auspices of the National Research Council reports that iodides have no effect

6 Systemic and topical applications of sodium sulfamerazine are said to sterilize lesions of chromoblastomycosis. Give a priming intravenous injection of 5 gm dissolved in at least 200 cc of normal isotonic saline solution. Maintenance oral doses approximate 3 gm daily with equal amounts of bicarbonate of soda. Wet dressings of 10% sodium sulfamerazine may be applied to lesions

7 With evidence of systemic invasion inaugurate steps suggested for management of actinomycosis (p 4141)

CIRCULIN

An antibiotic obtained from broth cultures of a mucoid variant of *Bacillus circulans*

Available Product

Circulin is not yet commercially available

Bacterial Spectrum

Circulin active against gram positive and gram negative bacteria and against fungi is bactericidal as well as bacteriostatic. Its potency is not appreciably reduced by blood serum

Toxicology

Circulin is hemolytic and extremely toxic. It is unsuitable for parenteral administration though it may have possible value in local treatment of bacterial and fungous infections of the skin

Therapeutics

When available circulin may be tried locally in superficial bacterial and fungous infections

CLONORCHIASIS

[Chinese Liver Fluke Infestation]

1 Infestations with Chinese liver flukes are frequently encountered in fish-eating peoples of Japan, Korea and China. They have been

fibroblasts and the reticulo endothelial system including lymph nodes spleen bone marrow and Kupffer cells of the liver

The collagen diseases appear to be caused by disturbances of the entire mesenchymal defense unit. They are undoubtedly related to those perversions of the mechanisms of defense now recognized as allergic hypersensitivity reactions (p 4169). Quite likely introduction of alien antigen in the hypersensitive results in abnormal activity of defense mechanisms characterized by alterations in serum globulin and mesenchymal tissues. The latter react by degeneration and proliferation.

The concept of collagen disease has more than academic importance. Since Hench and associates have shown regression of collagen disturbances following administration of cortisone and ACTH, practitioners eagerly await adequate supplies of these products in order to translate hypothesis into therapeutic reality.

COLON BACILLUS INFECTIONS

Principles of Diagnosis and Therapy

1 *E. coli*, a normal inhabitant of the lower intestinal tract, gains easy access to the peritoneum and to urinary and biliary passages.

2 *E. coli* must be considered the primary or a secondary pathogen in every colonic, peritoneal, biliary or urinary infection.

3 *E. coli* is sensitive to aureomycin, chloramphenicol, sulfonamide and the streptomycins. The efficacy of these antibiotics has made obsolete colic vaccine and a long list of urinary antiseptics including acriflavine, caprokol, formin, hexamethylamine, hexylresorcinol, methenamine, pyridium, urethrum and urotropin.

Practical Management

Prophylaxis

1 Prior to instrumentation of the urinary tract (catheterization, cystoscopy) and before any surgical procedure involving peritoneum, rectum, anus and urinary or biliary passages, give prophylactic antibiotic therapy aimed at elimination of *E. coli* and allied organisms. For optimum protection against the widest range of the bacterial spectrum, prescribe aureomycin or chloramphenicol. Of the former, recommend doses of 2 gm daily (approximately 25 mg per kilogram of body weight for the average adult weighing 150 lbs). Of chloramphenicol, give slightly higher doses approximating 3 gm daily. Continue maintenance doses of antibiotic for five to seven days before the projected procedure.

2 If expense is a factor, substitute sulfonamide whose range of bacterial coverage is appreciably less than aureomycin and chloramphenicol and whose toxicity is appreciably more.

3 If a soluble sulfonamide is selected, give equal parts of sulfadiazine

test is repeated using 1:100 dilution. In the investigation of chronic pneumonitis tests are also made with tuberculin and histoplasmin.

Practical Management

Immediate Care

1 Since there is no specific for the treatment of coccidioidomycosis the practitioner is dependent primarily upon general hygienic measures.

2 Excise cutaneous manifestations of coccidioidomycosis if possible. This, failing, try roentgen radiation, electrocoagulation and iontophoresis with copper sulfate as described in the management of chromoblastomycosis (p. 4287).

3 Treat the patient with chronic pulmonary coccidioidomycosis as if afflicted with chronic tuberculosis. Bed rest is mandatory in the presence of systemic manifestations; a high caloric diet is ordered (p. 671). Vitamin supplementation is advisable, particularly with vitamins A and C; the former is given orally in daily doses of 100,000 units while vitamin C is injected intramuscularly as 250 to 500 mg. of ascorbic acid. Transfusions are recommended for those who are anemic. Immuno-transfusion with blood drawn from donors inoculated against coccidioides may be tried as a measure of desperation.

4 Inject coccidioidin vaccine starting with an initial intramuscular dose of 0.01 cc. of the highest dilution to give a positive intracutaneous reaction. If there is no severe reaction after two or three days inject the same dose intravenously. Thereafter twice weekly increase the dose by increments of 0.01 cc. until 1 cc. of the dilution can be given without significant systemic reaction. The next higher dilution is then employed in similar manner until the patient receives 0.3 to 0.5 cc. of undiluted vaccine.

5 It has been suggested that vaccine therapy be accompanied by intramuscular injections of colloidal copper using 5 cc. every fourth day until 10 to 25 injections have been made.

6 On an empiric basis oral administration of benzoic acid has been recommended in conjunction with vaccine therapy. Every four hours 1 gm. is administered for a week. The dose is then increased to 1.5 gm. if tolerated. Symptoms of benzoic acid poisoning are similar to those of salicylism (p. 3934).

7 It has been abundantly shown that the following anti-infective agents have no value in the treatment of coccidioidomycosis: penicillin, streptomycin, iodide, antimony, sulfonamides, thymol, and gentian violet.

COLLAGEN DISEASES

The collagen diseases include rheumatoid arthritis, rheumatic fever, serum sickness, periarteritis nodosa, lupus erythematosus, scleroderma, dermatomycosis, glomerulonephritis, malignant hypertension and other syndromes in which alterations are observed in cartilage, bone

Continuing Care (Unfavorable Course)

1 With a progressively unfavorable course suspect diminished patient resistance organism insensitivity or local mechanical difficulty

2 To strengthen patient resistance consider plasma infusion or transfusion of whole blood

3 To bacteriologist send specimen of infected urine stool bile or peritoneal exudate Request gram stain for description of predominant organism Test sensitivity of isolated microbes to available antibiotics

4 For evidences of mechanical difficulty consult surgeon or urologist. If biliary or urinary calculi congenital anomalies or undrained pockets of pus are demonstrable suggest surgical intervention for their correction

5 Increase dose of antibiotic Raise aureomycin or chloramphenicol to daily quantities approximating 100 mg per kilogram per day (7 gm for average adult weighing 150 pound.)

6 Consider combining antibiotics giving equal parts of aureomycin and chloramphenicol to total 100 mg per kilogram per day (3.5 gm of each for average adult weighing 150 pound.)

7 Consider supplementation of aureomycin and/or chloramphenicol with sulfonamide For intravenous introduction inject loading dose of 2.5 gm each of sodium sulfadiazine and sodium sulfamerazine in at least 200 cc of diluent preferably molar lactate For oral priming dose prescribe 2 to 4 gm each of sulfamerazine and sulfadiazine with 1 teaspoonful of bicarbonate of soda Follow by daily maintenance doses of an amount similar to loading dose divided into 4 equal portions given at six hour intervals

8 If neither aureomycin nor chloramphenicol is tolerated combine sulfonamide with streptomycin as previously detailed

9 Concurrently with sulfonamide or streptomycin start prophylactic doses of antihistamine using 200 mg daily of pyribenzamine or benadryl

10 In the rare instance of organism resistance to commercially available antibiotics apply for polymyxin despite its nephrotoxicity Under supervision inject 25 mg per kilogram of body weight (1.75 gm for average adult weighing 150 pounds) for priming and daily maintenance doses

COLORADO TICK FEVER

[American Mountain Fever Non Exanthematous Tick Fever
Tick Fever]

Colorado tick fever is a viremia (Cox) and not a rickettsial disease as previously reported (p 384)

Principles of Diagnosis and Treatment

1 Onset of Colorado tick fever is acute the patient noting the development of symptoms almost to the minute

zine and sulfamerazine with a teaspoonful of bicarbonate of soda. Prescribe daily 2 gm. of each for four to seven days prior to operation.

4 If an insoluble sulfonamide is selected particularly for its effect on intestinal contents prefer sulfathalidine in a priming dose of 3 gm. for the average adult weighing 150 pounds. Maintain sulfonamide levels in the feces with daily maintenance doses of 3 to 6 gm.

5 If the intermediately soluble sulfonamide thiamyd is chosen administer doses comparable to those of sulfathalidine.

Immediate Care

1 For treatment of mild urinary infections with acid urine start with mandelic acid. Give the adult of average size 3 gm. of calcium mandelate 4 times daily. Limit fluids to 1000 cc. Check urinary acidity with chlorphenol red papers supplied by manufacturer.

2 For persistent or more virulent infections whether of urinary passages, peritoneum, biliary system or colon disregard factor of expense and prescribe aureomycin or chloramphenicol. Give a priming dose of 25 to 50 mg. per kilogram of body weight per day (2 to 4 gm. for the average adult weighing 150 pounds). Approximate the lower dosage with aureomycin and the higher with chloramphenicol. Suggest that 2 products be taken every few moments with large quantities of milk, ice cream, fruit juice, soup or tea to prevent gastric irritation.

3 Several hours after priming dose begin maintenance doses using a total 24 hour quantity equal to that of the priming dose. Divide into four equal portions. Give at approximately 6 hour intervals.

4 If stomach is intolerant of either antibiotic substitute the other remembering to use chloramphenicol in slightly larger and aureomycin in slightly smaller doses.

5 If stomach is intolerant of both make a saline solution of either and instill into rectum. Introduce through a funnel attached to inserted catheter. Hold buttocks firmly together particularly in infants and children to prevent expulsion.

6 If aureomycin and chloramphenicol are not tolerated orally or by rectum inject 100 to 500 mg. of aureomycin hydrochloride for intravenous use in diluent of 0.75% sodium carbonate supplied by manufacturer.

7 As a less effective and more toxic substitute for aureomycin and chloramphenicol deposit streptomycin intramuscularly. Give 1 gm. twice or thrice daily depending on severity of infection and patient response.

8 Concurrently with streptomycin and for a period of at least two weeks after the last dose prescribe antihistamine prophylactically using 200 mg. daily of pyribenzamine or benadryl (p. 4211).

Continuing Care (Favorable Course)

1 If symptoms subside and objective evidences of infection abate continue maintenance doses of mandelic acid, aureomycin, chloramphenicol or streptomycin as above.

nous to the nasopharynx especially staphylococci streptococci pneumococci and other antibiotic sensitive bacteria

6 With these concepts for background specific therapy of the common cold may be attempted using antihistamines local bactericides and virucides in preliminary phases and systemic bactericides for prophylaxis and treatment of late purulent complications

7 Unless for prophylaxis or treatment are inhalations or injections of highly publicized volatile oils catarrhalis vaccine cold vaccine enterol influenza bacterial vaccine orovax and other respiratory vaccines and vitamins

Practical Management

Immediate Care

1 Attempt to limit spread of infection by cautioning patient to use disposable tissues for nasal secretion to wear a mask of at least three thicknesses of gauze at all times and to control sneezing so that atmosphere is not heavily sprayed with offending virus

2 If possible try to persuade patient to remain in bed during acute phases of illness This precaution limits infectivity reduces complications and shortens convalescence

3 Symptomatic therapy elsewhere outlined may be comforting (p 395) But avoid treatment rhinitis due to overenthusiastic local use of adrenergics and/or bactericides.

4 To combat hypersensitivity phenomena in early stages of the common cold prescribe combined antihistamine and adrenergic (p 4212) Available commercial preparations include pyribenzamine ephedrine (12 and 25 mg) benadryl-ephedrine (10 and 50 mg) and histadyl ephedrine (16 and 50 mg) Order a single product after each meal and another at bed time With the last dose give a hypnotic to offset cerebral stimulation by adrenergic In the experience of Brewster of the United States Navy (1949) antihistamine alone given within the first six hours of onset of the common cold resulted in aborted infections in 116 of 156 patients

5 With marked nasal obstruction supplement oral therapy with local adrenergic For decongestant effect suggest an inhaler such as benzedrine tuamine or vonedrine Caution patient not to exceed four or five inhalations daily

For adrenergic decongestant action by instillation prescribe privityne hydrochloride in 0.1 or 0.05% solution Caution patient not to exceed three drops in each nostril at each instillation Do not permit more than three or four instillations daily preferably alternating with inhalation of adrenergic

6 For office aerosol therapy dissolve 10,000 units of bacitracin (p 4247) in a solution of chloroform (p 4282) Preferably give two treatments daily Avoid penicillin if possible to prevent sensitization precluding later use of antibiotic when need is greater

2 Initial complaints include chilling generalized aches headache pain in eyes or lumbar regions anorexia nausea vomiting and photophobia

3 Examination reveals elevation of temperature to 102 or 104° F and no other significant findings There is notably no eruption as in Rocky Mountain spotted fever and other rickettsemias

4 Blood counts reveal leukopenia The Weil Felix reactions are completely negative A complement fixation test using mouse brain antigen appears on the ninth to the fourteenth day after onset

5 The initial temperature lasts for approximately forty eight hours There is then a remission of two or three days and a recrudescence for another forty eight to seventy two hours The saddle back temperature record is quite characteristic

6 In convalescence there is prolonged asthenia Patients develop a lasting immunity Complications and fatalities are unknown

7 Prophylaxis of Colorado tick fever is best accomplished by avoiding the vector which alone to the best of present knowledge transmits the disease

8 A vaccine of chick embryo adapted virus is presently under experimental investigation Further information may be obtained from Lederle Laboratories

9 Of the antibiotics only aureomycin and chloramphenicol appear likely to influence the disease in any way Because of the benign character of the affliction only symptomatic therapy appears necessary

COMMON COLD

[Upper Respiratory Infection]

Principles of Diagnosis and Therapy

1 While the specific virus of the common cold continues to be elusive many empiric observations justify abandonment of the previous therapeutic policy of defeatism (p 391)

2 In addition to the specific virus upper respiratory infections are produced by a wide variety of antibiotic sensitive organisms including staphylococci streptococci pneumococci Klebsiella etc

3 Granting that the upper respiratory infection most often is due to antibiotic resistant cold virus elimination of antibiotic sensitive organisms may assist the tissues in their defense mechanisms in the manner in which penicillin and aureomycin supplement amebacides in amebiasis (p 4183)

4 In the early stages of many microbic invasions of the upper respiratory passages symptoms resembling acute histamine type allergic hypersensitivity reactions are encountered These simulate the vasomotor rhinitis of pollinosis (hay fever) (p 2097)

5 Later phases of upper respiratory infections feature secondary complications resulting from tissue invasion by micro organisms indige

CONTACT ATOPY

[Contact Dermatitis Eczema Occupational Dermatitis
Dermatitis Venenata]

Earliest recognition of dermatitis venenata occurred in the sensitized who developed eruptions when exposed to poison ivy oak or sumac. More recently it has become apparent that an infinitely larger number of individuals suffer from contactual atopies from cosmetics and chemicals used occupationally (Fig 982 p 3331 and p 3330)

Principles of Diagnosis and Treatment

- 1 Identify offending contactual substance by history and process of elimination. Patch tests may occasionally be of value (p 556)
- 2 Eliminate contactual substance if nonessential
- 3 In the case of cosmetics substitute allergen free products (Almay Marcelle)
- 4 In occupational dermatitis try to guard against actual contact with offending substance. If impossible suggest change of position
- 5 In the case of poison ivy oak or sumac desensitize with rhus extracts. Inject intramuscularly 1 cc and repeat dose after interval of two weeks. Official poison ivy extracts are available from Abbott Laboratories, Hollister Sier, Lederle, Mulford, Parke Davis and Pitman. Moore Poison Oak Extract from Hollister Sier, Lederle and Pitman. Moore Poison Sumac from Mulford
- 6 For palliation in all instances prescribe antihistamines as in serum sickness (p 4519). Supplement with adrenergens if necessary. Use intravenous procaine as a desperation remedy (p 4567)

CORTISONE CORTONE

[See Adrenal Cortical Extracts]

DDT

[Chlorinated Diphenyl Ether]

DDT is the most valuable insecticide used by the United States Army. It has revolutionized the problem of insect control. All other preparations currently under trial require comparison with DDT. Hence it is important for the practitioner to be aware of its properties and hazards.

Chemically DDT is 2,2 bis (p chlorophenyl) 1,1,1 trichloroethane. It is a white powder prepared synthetically.

Available Products

DDT Powder (100%) for preparation of dusts, suspensions, emulsions and solutions

DDT Louse Powder (10% with 90% pyrophyllite) For individual delousing

Continuing Care (Unfavorable Course)

1 If combined adrenergic antihistamine bactericidal therapy is unsuccessful if onset of respiratory infection is accompanied by temperature elevations in excess of 102° F if there is chilling actual chill, or excessive prostration or toxemia if patient is an infant an aged person or one suffering from chronic illnesses of whatever type start probatory virucidal therapy with aureomycin or chloramphenicol provided that the expense is not excessive Order a loading dose of 25 to 50 mg per kilogram of body weight (1.75 to 3.5 gm for average adult weighing 150 pounds) Approximate the lower concentration with aureomycin and the higher for chloramphenicol Suggest that 2 products be taken every few minutes with milk fruit juice tea soup ice cream or cream cheese to minimize gastric irritation

2 Continue oral antihistamine adrenergic and intranasal adrenergic

3 Maintain levels of virucide by giving daily maintenance doses of aureomycin or chloramphenicol equal to priming dose Start four to six hours after priming dose has been completed Divide total daily quantity into 4 equal portions given at six hour intervals

4 With initiation of virucidal therapy discontinue aerosolization with bacitracin

5 Despite pressure avoid local or systemic use of sulfonamide penicillin silver salts mercurials iodides etc Sulfonamide toxicity and hypersensitivity phenomena are particularly hazardous (p 4179)

Continuing Care (Progressively Unfavorable Course)

1 With onset of purulent complications discontinue oral combination of adrenergic antihistamine

2 Continue intranasal adrenergic adding 0.25 to 1% cocaine if necessary to drain accessory nasal sinuses

3 Continue maintenance doses of aureomycin or chloramphenicol

4 Supplement aureomycin or chloramphenicol with parenteral penicillin Introduce intramuscularly 600 000 units of procaine penicillin G in aqueous suspension for priming dose Repeat at eight, twelve or twenty four hour intervals depending on course of event

5 Start straight antihistamine orally Give 200 mg daily of pyrilamine or benadryl Continue for at least two weeks after last dose of antibiotic to prevent or mitigate hypersensitivity reactions (p 4167)

CONJUNCTIVITIS

See Inclusion Conjunctivitis Koch Weeks Conjunctivitis Epidemic Keratoconjunctivitis Vernal Conjunctivitis and Morax Axenfeld Conjunctivitis

critical rise falls by crisis. On the third day there is often a partial defervescence giving a saddle back appearance to the chart.

6 On the third to fifth day a maculopapular or scarlatiniform rash appears on the trunk and spreads to extremities and face. Occasionally the eruption is petechial.

7 Physical examination reveals only the rash and lymphadenopathy.

8 The viremia is demonstrable by special technics. Many different strains may be isolated, partially accounting for protean clinical manifestations.

■ Convalescence is prolonged due to persistent asthenia. Specific virus neutralizing bodies are demonstrable.

Practical Management

Prophylaxis

1 Vector control employing insecticides (p 4373) for individual protection.

2 Injection of mouse adapted vaccine virus prepared by United States Army Medical Corps has proven stable, safe and efficient in human volunteers.

Immediate Care

1 Isolation.

2 Symptomatic relief (p 68).

3 Probatory anti-infective therapy with chloramphenicol or aureomycin.

DERMATITIS HERPETIFORMIS

[Dühring's Disease]

Although it has been reported that sulfapyridine is of value in the treatment of dermatitis herpetiformis (Fig 945 p 3241 and p 3371), therapeutic trials with less toxic aureomycin and chloramphenicol appear distinctly warranted.

Those who use sulfapyridine prescribe 1 gm thrice daily for the first day and 0.5 gm thrice daily thereafter. Because of the unknown etiology of the disease and the suspicion that it may be a manifestation of allergic hypersensitivity, antibiotic therapy is best supplemented with antihistamine (p 4212).

DERMATOMYOSITIS

Principles of Diagnosis and Therapy

1 Regard dermatomyositis (p 3373) as a manifestation of chronic tuberculin type hypersensitivity (p 4168) with predominant cutaneous

DDT Larvicide Powder (10% in talc) Dilute with four parts of dust for mosquito larvicide Use undiluted as roach powder

DDT Sprays (1 to 5% solution) For surface deposit against flies mosquitoes, roaches bedbugs and ants

DDT Aerosol Spray Bomb 2% pyrethrum (of 20% extract) 3% DDT, 5% cyclohexanone 5% hydrocarbon oil and 85% Freon 12 Dispensed in metal or in bomb For home use to kill mosquitoes flies etc Spray for four seconds for each 1000 cubic feet

Action on Insects DDT apparently enters through the tarsi It kills the animal by excitation and paralysis of the central nervous system When insects are sprayed they fly around in erratic circles for ten to twenty minutes then fall to the ground apparently paralyzed and die several hours later

Human Toxicity DDT appears to have minimum toxicity for the human being whether used as spray dusting powder or as a food contaminant In a few human instances of poisoning where large doses were taken mistakenly for baking powder giddiness and weakness developed in one to two and a half hours Additional symptoms included nausea vomiting anxiety stiffness pains in the jaws and soreness of the throat for several days All patients recovered within forty eight hours though one instance of a fatal poisoning in a child was reported from a dose that approximated 150 mg per kilo

Insecticidal Activity DDT (Table p 4373) is of unparalleled value as an insecticide As such it has the property of preventing dissemination of disease either endemically or epidemically when the microbic pathogen is vector borne

DDT is toxic for mosquitoes and their larvae for mites chiggers lice tick fleas housefly biting flies cockroaches gnats bedbugs and ants Its use in scabies is disappointing but fortunately other scabicides are currently available (p 4513)

DENGUE AND DENGUE LIKE FEVERS

[Breakbone Fever Dandy Fever Bouquet Fever Giraffe Fever Polka Fever van der Scheer Five Day Fever Panama Six Day Fever Seven Day Fever of India]

General Principles of Diagnosis and Therapy

1 Dengue and dengue like fevers are viremias the former are mosquito borne (*Aedes aegyptis*) in the latter the sandfly is the vector (p 406)

2 Epidemics have a high attack rate but negligible mortality (3 per 10 000)

3 The incubation period may vary between two and one half and eighteen days but the average is five to eight days

4 The onset is usually acute with rise of temperature chilliness multiple aches and pains photophobia dysuria epistaxis constipation and marked prostration

5 Fever usually persists for five or six days and then after a pre

NEOPLASMS OF OROPHARYNX**Practical Management**

- 1 During routine examination look for cysts and neoplasms (Table 120 p 1714 p 1712-1719 Figs 374-382 pp 1713-1719)
- 2 Get blood for serologic test for malignancy (p 4431)
- 3 Refer to oral surgeon for opinion and removal of specimen for biopsy
- 4 Consider surgical excision and/or roentgen therapy

NEOPLASMS OF ESOPHAGUS**Practical Management**

- 1 Question the patient as to dysphagia (p 1722)
- 2 Obtain blood for serologic tests for malignancy (p 4431)
- 3 Order contrast roentgenograms using thick barium mixture Exclude non neoplastic disturbances of esophagus (Fig 383 p 1721 Fig 385-391 pp 1725-1737)
- 4 Note characteristic mouse eaten deformity of malignancy (Fig 392 p 1739)
- 5 Refer patient to specialist for esophagoscopy and to obtain specimen for biopsy
- 6 Consider radical surgery

NEOPLASMS OF STOMACH**Practical Management**

- 1 Palpate for masses in the epigastrium (p 1814)
- 2 Examine daily stool specimens for evidences of occult bleeding (p 1843)
- 3 Inquire into history of anorexia (p 1779) or dyspepsia (p 1770)
- 4 Obtain gastric contents Note absence of free hydrochloric acid Send specimen to clinical pathologist for cytodiagnosis using Papanicolaou stain
- 5 Get blood for serodiagnosis of malignancy (p 4431)
- 6 If possible obtain electrogastrogram (p 4431)
- 7 Refer to specialist for gastroscopy
- 8 Refer to roentgenologist for contrast x rays (Figs 408-410 pp 1815-1818)
- 9 On suspicion of neoplasm presumably malignant consider laparotomy and radical gastrectomy

NEOPLASMS OF COLON AND RECTUM**Practical Management**

- 1 Palpate abdomen carefully at each physical examination Remember that the normal colon is palpable especially in lean individuals and particularly when there is associated spasmosis Nevertheless exclude possibility of neoplasm on slightest suspicion particularly

lesions (Fig 988 p 3373) and accompanying widespread systemic disturbances (p 4166)

2 Quite possibly the offending allergen is bacterial and more than likely streptococcal

3 Treat as acute lupus erythematosus recalling favorable therapeutic result with ACTH

4 Oral administration of 2 gm of para aminobenzoic acid (PABA) every two hours night and day for several months greatly improved a small group of patients at the University Hospital of Michigan

DERMATOPHYTOSIS

[See Fungus Infections]

DIASONE

Diasone (disodium formaldehyde sulfoxylate diamino-diphenyl sulfone) is prepared as a light yellow stable powder

Available Products

Not yet commercially released diasone is put up in capsules or tablets of 0.3 gm with 10% sodium bicarbonate for investigation only

Administration

Doses of diasone start with 0.3 gm daily increased to 0.3 gm thrice daily and continued for two months. After a rest period of two weeks the course may be repeated. Frequent blood counts and urinalyses are required for early detection of anemia, leukopenia, thrombocytopenia and hematuria.

Pharmacology and Toxicology

[See Sulfones]

DIGESTIVE SYSTEM NEOPLASMS OF

Neoplasms of the digestive tract constitute a daily challenge to the practitioner. Tumors of the oropharynx are clearly visible to patient, dentist and physician; lesions of stomach and colon may be palpable long before subjective symptoms arise and growths of rectum and sigmoid may be palpated or recognized by proctoscopy and sigmoidoscopy.

The merest suspicion of a positive finding suffices for reference to the specialist for contrast roentgenography, esophagoscopy, gastroscopy, electrogastrography, cytologic examination of direct spreads of gastric contents, intestinal mucus or feces by the method of Papanicolaou and all else failing, consideration of exploratory operation.

2 For preparation of choice select diphtheria toxoid (alum precipitated) tetanus toxoid (alum precipitated) pertussis vaccine combined NNR (Parke Davis Squibb Wyeth Lederle National Drug and Sharp & Dohme) Inject 0.5 cc intramuscularly Repeat twice at intervals of four to six weeks to total 3 injections or 1.5 cc

If patient has had pertussis substitute diphtheria toxoid (alum precipitated) tetanus toxoid (alum precipitated) USP (Lederle Lilly National Drug Parke Davis Pitman Moore Sharp & Dohme Squibb and Wyeth)

3 For stimulating or booster dose inject intramuscularly a single deposit of 0.5 cc If there is direct exposure to diphtheria substitute 0.5 to 1 cc diphtheria toxoid (alum precipitated) USP (Lederle Lilly National Drug Parke Davis Sharp & Dohme Squibb Wyeth)

4 Local reactions to triple immunization are ordinarily mild If there is significant local pain or swelling apply ice bag or wet dressing If there are constitutional symptoms give acetylsalicylic acid in capsules or tablets containing 0.3 gm Repeat at three or four hour intervals if needed

5 To the hypersensitive give concurrent prophylactic antihistamine in daily doses of 200 mg of pyribenzamine or benadryl Continue for two weeks after last immunization

6 Obsolete are plain diphtheria toxoid (anatoxin Ramon diphtheria anatoxin) USP and diphtheria toxin antitoxin mixture NNR

Immediate Care

1 Inaugurate general measures required for care of infected patient (p 67)

2 Notify health authorities

3 Inject intramuscularly 5 cc of 1% benadryl for prophylaxis against hypersensitivity reactions (p 4168)

4 Inject intramuscularly 600 000 units of crystalline procaine penicillin G with 200 000 units of crystalline potassium penicillin G in aqueous suspension

5 Inquire into personal or familial history of hypersensitivity Make intracutaneous and ophthalmic tests for sensitivity to horse serum (p 555)

6 With negative sensitivity (p 4190) deposit intramuscularly 50 000 to 100 000 units of diphtheria antitoxin USP (Cutter Lederle Lilly National Drug Parke Davis Pitman Moore Squibb Wyeth)

7 With definite hypersensitivity administer diphtheria antitoxin by the method of desensitization elsewhere described (p 4191)

8 Concurrently with antitoxin and antibiotic give oral doses of antihistamine approximating 200 mg daily of pyribenzamine or benadryl

9 Take throat cultures of contacts in school industry and household for detection of carriers Make Schick test simultaneously (Fig 43 p 302)

10 Give booster doses of diphtheria toxoid alum precipitated to contacts previously immunized and to Schick negative reactors

if bowel is palpable in an isolated portion and previous records contain no note of this finding

2 Question patient concerning changes in bowel habits whether on the side of diarrhea (p 1840) or constipation

3 Obtain stools daily for at least three days and examine for occult blood (p 1843)

4 Consider differential diagnosis of swellings or tumors in right lower quadrant (p 1886) left lower quadrant (p 1870) epigastrium (p 1814), left upper quadrant (p 1849) and right upper quadrant (p 1957)

5 At each abdominal examination complete survey by rectal palpation. Make this examination by bimanual method using the abdominal hand to press the viscera against inserted finger

6 Examine fecal specimen on finger-cot or glove for occult blood (p 4384)

7 Obtain blood for serodiagnosis of malignancy (p 4431)

8 On slight suspicion insert proctoscope and sigmoidoscope in attempt to visualize lesion. If a growth or ulceration is observed get a surface biopsy and send specimen to clinical pathologist for Papanicolaou stain

9 On suspicion order or perform contrast roentgenography by barium meal and barium enema (Fig. 427 and 428 p 1889 Figs 429 and 430 p 1890)

10 Check x ray findings with specialist roentgenologist

11 Check sigmoidoscopic findings with proctologist or surgeon

12 On suspicion of a neoplasm in an area not visible to proctoscopy and sigmoidoscopy consider exploratory laparotomy

DIPHTHERIA

Principles of Diagnosis and Therapy

- 1 With compulsory immunization diphtheria can be eliminated
- 2 Effective artificial active immunization can be induced by injection of diphtheria toxoid
- 3 Despite availability of potent antitoxin and of antibiotics of considerable bacteriostatic and bactericidal potential active treatment of diphtheria is less successful than prevention
- 4 Diphtheria is a grave and treacherous disease whose late complications may follow seemingly mild infections. In consequence treatment must be prompt and persistent using massive doses of available anti-infective agents

Practical Management

Prophylaxis

- 1 Advise active immunization of all infants preferably between sixth and twelfth months of life and of Schick positive adults (Fig 43 p 302)

DIURETICS

Mercurials continue to dominate the important field of diuretic activity. The accompanying chart and notes summarize and supplement previous considerations (pp 2257-2262).

MERCURIAL DIURETICS

| Preparation | Council Accepted Commercial Preparations |
|-----------------------------------|---|
| Meralluride Sodium N N R. | Mercurydrin sodium solution (Lakeside) ampuls of 1 and 2 cc (each cc equals 119 mg of meralluride and 13 mg of theophylline intramuscular dose 0.5 to 2 cc Tablets with ascorbic acid each containing meralluride 60 mg and ascorbic acid 100 mg for oral use give 1 to 2 tablets daily for maintenance and 3 to 5 tablets for active diuretics |
| Mercurydrin | See Meralluride Sodium. |
| Mercuriothylurine Injection U S P | Mercuzanthin (Campbell) Ampuls of 1 and 2 cc (each cc contains 37 to 42% of mercury equivalent and theophylline equivalent of 93 to 107%) intramuscular dose 0.5 to 2 cc Mercuzanthin enteric coated tablets each representing 0.74 cc of mercuriothylurine injection oral dose 3 to 5 tablets daily for one or two successive days or 5 tablets after breakfast once a week |
| Mercuzanthin | See Mercuriothylurine Injection |
| Mersalyl and Theophylline U S P | Salyrgan Theophylline Solution (Winthrop) ampuls of 1 and 2 cc intramuscular dose 0.5 to 2 cc Enteric coated tablets containing 80 mg Mersalyl and 40 mg theophylline oral dose 3 to 5 daily for one or two successive days or 5 tablets after breakfast once weekly |
| Salyrgan Theophylline | See Mersalyl Theophylline |
| Thomerin N N R | Thomerin (Campbell) vials containing 10 and 20 cc for subcutaneous injection dose 0.5 to 2 cc |

1 Establishment of the dry weight is the most accurate yardstick for determination of indications for use of diuretics and for estimating their efficiency. It is not necessary to measure intake of fluid and output of urine.

2 Mercurials increase sodium as well as water loss. Therefore do not limit sodium intake lest the patient after diuresis evince manifestations of hypochloremia (p 732) or hyponatremia (p 729) requiring addition of salt to the dietary intake.

3 Among variables requiring consideration before use of diuretics are concurrent administrations of opium and opium like synthetics and of digitalis bodies. Opiates, their derivatives and substitutes are anti-diuretic. The edematous patient concurrently taking any of these preparations may experience a more favorable diuretic response if analgesic is discontinued. The edematous digitalized patient given a

11 Consider passive immunization of Schick positive reactors. If exposure has been heavy and there are no evidences of hypersensitivity to horse serum inject intramuscularly 5 000 to 10 000 units of diphtheria antitoxin. If contact is skin sensitive or has a history of allergy protect with intramuscular deposit of 300 000 to 600 000 units of crystalline procaine penicillin G in aqueous suspension.

12 Treat carriers with lozenges containing 10 000 units of penicillin or preferably give three daily intramuscular deposits of 600 000 units of crystalline procaine penicillin G.

Continuing Care (Favorable Course)

1 Continue maintenance doses of diphtheria antitoxin using 20 000 to 40 000 units intramuscularly once or twice daily as indicated.

2 Continue deposits of penicillin using 300 000 to 600 000 units of procaine penicillin G in aqueous suspension once or twice daily as indicated.

3 Continue antihistamine for at least two weeks beyond last dose of antibiotic or heterologous antiserum.

4 Maintain bed rest for at least two or three weeks after all evidences of disease have disappeared. If possible obtain an electrocardiogram to supplement physical examination before permitting ambulation. Particularly exert precautions with persistent tachycardia, recent appearance of cardiac murmurs or irregularities or electrocardiographic deviations from the norm.

5 Avoid administration of digitalis unless there are clear evidences of backward failure (p. 858).

Continuing Care (Unfavorable Course)

1 If disease is hyperacute accompanied by extreme prostration or persistent set up intravenous drip. Maintain a rate no faster than 30 drops per minute so as not to overload the vulnerable circulation. Introduce first 5 cc of 1% benadryl follow with 50 000 to 100 000 units of diphtheria antitoxin keeping a syringe of 1 10 000 epinephrine hydrochloride at hand for intravenous introduction if hypersensitivity manifestations are encountered. After introduction of antihistamine and heterologous antiserum dissolve 500 000 to 1 000 000 units of crystalline potassium penicillin G in 200 to 500 cc of physiologic saline. Maintain drip with antibiotic solution until it is again time to re-introduce maintenance doses of antihistamine and antitoxin.

2 On slightest suspicion of laryngeal involvement prepare tracheotomy set (p. 3958). Preferably alert laryngologist or consultant surgeon for performance of procedure if indicated.

3 For supplementation of penicillin consider streptomycin and aureomycin. The latter proved successful in a single instance of diphtheria peritonitis and streptomycin was reported by the Council on Pharmacy and Chemistry to be occasionally effective as an antibacterial but not as an antitoxic agent. Neither streptomycin nor aureomycin however approximates in effectiveness the combination of diphtheria antitoxin with penicillin.

Principles of Diagnosis and Therapy

- 1 Avoid drugs which frequently cause toxicoderms (p 3339)
- 2 Eliminate non essential drugs suspected of producing hyper sensitivity
- 3 If sensitizing drug is essential as in the case of an antibiotic substitute a preparation of similar action but one that is less allergenic (penicillin for sulfonamide aureomycin or chloramphenicol for penicillin etc)
- 4 If it is necessary to continue or resume sensitizing drug as in the case of antibiotics try the brand of another manufacturer Give antihistamine concurrently for prophylaxis as well as palliation
- 5 If hypersensitivity symptoms persist after elimination of offending drug give antihistamine orally and parenterally as in serum sickness (p 4519) Supplement with adrenergic if necessary Add intravenous procaine in situations of desperation (p 4567)

ECHINOCOCCOSIS

[Hydatid Disease Cestodiasis]

Tapeworms which commonly infest man are *Taenia saginata* (beef) *T. solium* (pork) *Echinococcus granulosus* (hydatid worm) *Hymenolepis nana* (dwarf tapeworm) and *Diphyllobothrium latum* (fish)

Intra intestinal infestations with the α invaders are controlled by use of anthelmintics (p 4561) *Extra intestinal lesions particularly hydatid cysts produced by echinococcus and cysticerci are not amenable to medical therapy and require surgical interference*

Attempts at operative removal or marsupialization of sacs are all that can be currently offered The Chief of the Division of Tropical Diseases of the National Institute of Health Bethesda Maryland asks to be notified in advance of operation so that arrangements can be made to freeze the intact sterile specimen for antigen production

ENCEPHALITIS (ENCEPHALOPATHY) OF POST INFECTIONOUS OR POST VACCINAL ORIGIN

General Principles of Diagnosis and Therapy

- 1 Encephalitis or more properly encephalopathy may follow infectious diseases such as measles chickenpox smallpox influenza lymphogranuloma venereum herpes simplex rubella mumps and pertussis (p 445)
- 2 Encephalopathies also may be sequels of vaccination with smallpox or rabies virus
- 3 Most likely these abacterial inflammations result from chronic tuberculin type allergic hypersensitivity (p 4169)

diuretic may suffer an acute attack of digitalis poisoning at the time of diuresis. To avoid this discontinue digitalis before giving the diuretic if possible and remove digitalis containing fluid by mechanical aspiration of pleural or peritoneal cavities.

4 Supplement mercurial therapy with acid producing ammonium chloride. Prescribe 1 to 15 gm of ammonium chloride in enteric coated tablets 4 times daily for three to four consecutive days.

5 If there is weight increase in excess of 5 pounds over dry weight despite ammonium chloride prescribe 3 to 5 tablets of mercurhydrin with ascorbic acid, mercuzanthin or salyrgan theophylline.

6 If oral therapy is unsuccessful or inadvisable inject thiomerin subcutaneously or mercurhydrin, mercuzanthin or salyrgan theophylline intramuscularly using 0.5 to 2 cc depending on the need and patient response.

7 Observe that thiomerin is available for subcutaneous injection. In the rare instance when the physician cannot get to the patient at frequent intervals thiomerin may be injected under his supervision by a registered nurse or a member of the family.

8 The frequent occurrence of severe reactions following intravenous injection some of which have been fatal should result in a ban on this route of administration. Intramuscular and subcutaneous injections are as efficacious and they are free from most hazards.

9 When diuresis has resulted in an approximation of dry weight try to maintain the low weight with oral administration of commercially available mercurials. Give 3 to 5 tablets once every few days depending on changes in body weight or prescribe 1 to 2 tablets daily for several successive days as needed.

10 During mercurial therapy examine urine weekly for evidence of significant albuminuria or hematuria. Resume mercurial administration as soon as specimen is clear.

DRACONTIASIS

[See Filariasis.]

DRUG ALLERGY

[Dermatitis Medicamentosa]

Drug allergies (pp 549 and 3335 Fig 983 p 3333) occur very frequently in routine clinical practice. Therapeutic objectives in the management of this type of allergic hypersensitivity include elimination of non essential sensitizing agents, substitution of less sensitizing product for an essential drug, palliation and prophylaxis with adrenergens and antihistamines.

disturbances of the type seen in paralysis agitans. These are associated with vegetative manifestations such as sialorrhea, dacryorrhea and seborrhea. Additionally there are psychotic manifestations particularly depressions.

8 The diagnosis is established by clinical manifestations during an epidemic and by virus neutralization tests on blood taken during the height of the disease and in convalescence.

9 As yet there is no specific for prevention or cure of epidemic encephalitis. For lack of some better specific patients may be given injections of Lederle's encephalitis vaccine (herpes F strain) a 10% rabbit brain suspension of virulent neurotropic virus inactivated by formaldehyde. One cubic centimeter is injected intramuscularly or subcutaneously daily for two days. Then 2 cc are given daily for four days and 3 cc for seven to ten days. Thereafter 4 cc are deposited twice a week until a total of 100 cc has been administered.

In chronic encephalitis 1 cc is given daily for two days, 2 cc daily for three days and 4 cc twice a week for as long as is necessary with rest periods of one to two months each year.

10 For desperation antibiotic therapy large doses of aureomycin or chloramphenicol (100 mg per kilogram of body weight per day) may be tried for possible virucidal activity.

ENCEPHALITIS EQUINE

General Principles of Diagnosis and Therapy

1 Eastern and western types of equine encephalitis are specific viral infections which produce non-suppurative encephalomyelomeningitis (p 442).

2 Occurrence of the disease in late summer suggests a mosquito vector (p 451).

3 Attempt prophylaxis by mosquito repellents and insecticides (p 4373) and by injections of commercially available (Lederle) formalized chick embryo vaccine first employed for horses. Give 2 injections each of 1 cc subcutaneously at intervals of one week.

4 Successful serum therapy has been reported with a hyperimmune rabbit preparation and with intramuscular injections of gamma globulin using doses of 10 cc daily for seven days.

5 Because of the mortality and morbidity of the disease undertake probatory anti-infective therapy with aureomycin and chloramphenicol approximating 100 mg per kilogram for priming and daily maintenance doses (28 capsules daily for adult weighing 150 pounds).

6 If the patient is unable to swallow or has gastric intolerance inject intravenously 500 mg of aureomycin hydrochloride in the supplied diluent of 0.75% sodium carbonate. Repeat every 6, 8 or 12 hours according to severity of attack and patient response.

4 While the complication of encephalopathy is not often encountered its consequences are so grave that use of antihistamine is warranted throughout the course of any infectious disease capable of producing it as well as concurrently with administration of virus vaccines

5 For prophylaxis give 200 mg daily of pyribenzamine or benadryl during infection or with administration of vaccine Continue antihistamine for at least two weeks after infection is terminated or last dose of vaccine has been administered

6 For active treatment once evidences of encephalopathy have developed use massive doses up to 800 mg daily of pyribenzamine or benadryl Additionally give parenteral injections of 5 cc of 1% benadryl twice or thrice daily

7 Avoid anti-infective agents during course of encephalopathy Particularly refrain from administration of hyperallergenic preparations such as sulfonamides and streptomycins

ENCEPHALITIS EPIDEMIC

[Encephalitis Lethargica Sleeping Sickness Von Economo's Disease]

General Principles of Diagnosis and Therapy

1 Epidemic encephalitis is a non-suppurative encephalomyelomeningitis of viral origin (p 442) Unlike most other allied disturbances it occurs chiefly in the winter and early spring months suggesting that its spread is not dependent on insect vectors

2 Epidemic encephalitis manifests itself in the early stages by a variety of complicated syndromes The two best defined are the somnolent ophthalmoplegic and the irritative hyperkinetic

3 The somnolent-ophthalmoplegic type of epidemic encephalitis is characterized by a brief initial stage with fever meningeal irritation drowsiness and ocular paralyses

4 The irritative hyperkinetic type is initiated by fever and excitement followed by choreiform movements and myoclonic contractions

5 Other early types of the disease are the psychotic with manifestations ranging from simple mental impairment to simulations of general paresis or schizophrenia the poliomyelitic with lower motor neurone paralyses and involvement of posterior root ganglia tabetic with ataxia epileptomaniacal cataleptic amyostatic akinetic with apathy rigidity akinesia amimia slow motion and tremor and fulminating from which the patient succumbs within a few hours

6 No matter what the nature of the initial stage the second stage of pseudo-psychoneurosis which may persist for months or years is characterized by the subjective symptoms of headache insomnia irritability dizziness and fatigue

7 The third or chronic stage may immediately follow the first phase or it may not become manifest until years after It consists of motor

4 Prophylaxis is best accomplished during an outbreak by liberal use of insecticides and insect repellents (p 4373)

5 A vaccine prepared from formalin inactivated or irradiated chick embryo cultures may be obtained from U S Public Health Service to whom inquiries should be addressed

6 The infected patient requires hospitalization and institution of measures suggested for nonspecific treatment of contagious disease (pp 68-73)

7 For active treatment commercially available encephalitis vaccine herpes F strain (Lederle) may be given intramuscularly in doses of 1 cc daily for two days 2 cc daily for four days 3 cc daily for seven to ten days and 4 cc twice weekly to total 100 cc

8 In the absence of specific information chloramphenicol or aureomycin is suggested for probatory anti infective therapy Order initial priming and daily maintenance doses of 100 mg per kilogram (7 gm for the average adult weighing 150 pounds) If there is no response to the chosen antibiotic try the opposite number in the same dose or combine both products

ENCEPHALOMYOCARDITIS

[Three Day Fever of Manila]

Encephalomyocarditis is an epidemic viremia characterized by sudden onset of fever with headache chill coma stiffness of the neck injection of the pharynx and meningeal manifestations The blood shows leukopenia and lymphocytosis and the cerebrospinal fluid reveals a pleocytosis up to 220 cells with 21 to 95% lymphocytes

Recovery is prompt on the third or fourth day Despite marked cardiac lesions in experimentally infected animals none of a large group of American soldiers afflicted during an epidemic while stationed on the Philippine Islands experienced any complications or sequelae

The blood serum of convalescents exhibits neutralization of 100 to 160 lethal doses of the specific virus of encephalomyocarditis and is protective against several thousand lethal doses in animals Treatment however is wholly symptomatic

ENDOCARDITIS ATYPICAL VERRUCOUS

[Libman Sacks Syndrome Visceral Angitis]

Principles of Diagnosis and Treatment

1 Atypical verrucous endocarditis like rheumatic fever and rheumatoid arthritis (p 4502) is best considered a chronic tuberculin type hypersensitivity probably resulting from an allergic response to bacterial and/or drug antigen (p 4169)

ENCEPHALITIS JAPANESE B

[Australian X Disease]

Principles of Diagnosis and Therapy

1 Japanese B encephalitis is one of many non suppurative encephalo myelomeningitides (p 442) An epidemic on the island of Okinawa in 1945 afforded opportunity for study of the disease as it affected natives and American military personnel

2 Common clinical manifestations in those who gave serologic evidences of having been afflicted with the infection included drowsiness lethargy confusion disorientation semi coma coma fever rigidity of neck and spine leukocytosis and spinal fluid pleocytosis

3 An appreciable amount of virus neutralizing antibody is demonstrable in the afflicted as early as three days after onset of symptoms Thereafter there is a constant increase in the amount of neutralizing antibody Complement fixation tests also are reliable in diagnosis though the appearance of the reaction may be delayed as long as five weeks

4 Neutralizing antibody is present in 90 per cent of adult natives suggesting that the disease is endemic on the island Neutralizing antibodies also are found in Okinawa horses goats and cows

5 Although the majority of serologically proven military cases occurred in the extreme northern part of Okinawa where mosquito control was inadequate the predominant mosquito of the island (*Culex quinquefasciatus*) is not a carrier of the disease

6 A vaccine administered to 60 000 to 70 000 of the military personnel stationed in the northern portion of the island in close proximity to civilian foci of infection proved completely protective While Japanese B encephalitis vaccine is not commercially available it may be procured through application to the United States Army Medical Corps

7 For active treatment probatory trial of aureomycin and chloramphenicol merits consideration in view of the demonstrable virucidal properties of these antibiotics

ENCEPHALITIS ST LOUIS**General Principles of Diagnosis and Therapy**

1 St Louis encephalitis is one of many varieties of nonsuppurative encephalomyelomeningitis (p 442) of specific viral origin

2 Its clinical manifestations are not specific The diagnosis is established epidemiologically and serologically (p 457)

3 The virus is probably insect borne The most likely vector is the mosquito although the disease occurs most frequently in summer and early fall

stitution Ave Washington D C for ACTH to Dr John R Mote Armour and Co Chicago Illinois Meantime make clinical trials of artisone (Wyeth) and per corten (Ciba) purchasable in the open market In the use of the latter inject 1 cc intramuscularly (equivalent to 5 mg desoxycorticosterone) followed within five minutes by intravenous introduction of 10 cc of 10% ascorbic acid (1 gm) Unless prompt and dramatic improvement is noted with artisone and per corten—ascorbic acid abandon therapy after three or four consecutive daily injections

9 In the presence of suspected bacterial allergen institute antibiotic therapy with hypo allergenic anti infective agents such as aureomycin and chloramphenicol Supplement with penicillin if there is no skin sensitivity to the latter

ENDOCARDITIS SUBACUTE BACTERIAL

[Endocarditis Lenta]

Principles of Diagnosis and Therapy

1 Subacute bacterial endocarditis is a bacteremia in which the invading organism localizes on damaged endothelium usually a heart valve deformed as the result of rheumatic fever (p 1021)

2 The diagnosis is made tentatively by the syndrome of prolonged fever cardiac murmurs and characteristic cutaneous lesions (petechiae Osler nodes and Janeway lesions p 1023 and Fig 224 p 1022)

3 The diagnosis is established definitively by blood culture Once identified the pathogen is subcultured since the protracted course of the disease permits sensitivity tests against various antibiotics

4 In most instances the invading microbe is the *Streptococcus viridans* which responds to high and sustained concentrations of penicillin However a minority of bacteremias reveal resistant strains of streptococci (such as *S fecalis* and the subacute bacterial endocarditis subgroup identified by Loewe) or other bacteria such as staphylococci *H influenzae* gonococci meningococci etc

5 Following isolation identification and tests for sensitivity against available antibiotics scientific anti infective therapy (p 4219) is begun

Practical Management

Prophylaxis

1 Before any surgical procedure including such relatively minor operations as tooth extraction or tonsillectomy patients with a history of rheumatic fever evidences of valvulitis (p 970) or signs of congenital heart disease are given prophylactic anti infective therapy with massive doses of penicillin At least 600 000 units of procaine penicillin G in oil with 2% aluminum monostearate (p 4453) are deposited preoperatively and daily for the first two or three post opera

2 Criteria for the establishment of the diagnosis of atypical verrucous endocarditis include

- (a) Continued fever
- (b) Cardiac murmurs suggesting endocarditis
- (c) Repeatedly sterile blood cultures on aerobic anaerobic and fortified mediums
- (d) Rheumatic fever like arthralgias
- (e) Fleeting white petechias
- (f) Evidences of renal involvement (albuminuria hematuria and nitrogen retention)
- (g) Signs of dry pericarditis
- (h) Cutaneous eruption of acute disseminated lupus erythematosus (Fig 223 p 1019)
- (i) Evidences of dermatomyositis (Fig 988 p 3373)
- (j) Manifestations of solar sensitivity
- (k) History of other hypersensitivity reactions

3 Comparison of the lesions of atypical verrucous endocarditis and those of tuberculin type hypersensitivities reveals a striking parallelism (p 4169)

4 Previous suggestions for intensive chemotherapy of atypical verrucous endocarditis (p 1020) were ill advised. Injections of sulfonamide and of gold hold small promise but grave threat

Practical Management

Immediate Care

1 Protect the patient from sunlight

2 Attempt to discover sensitizing antigen from history and physical examination. Particularly inquire concerning antecedent respiratory infection and local or systemic use of sulfonamides salicylates iodides etc

3 Eliminate or avoid all hyperallergens in diet drug cosmetics and air. Keep the room at a comfortable temperature. Use an air conditioner with a filter to eliminate pollen. Use allergen free linen and bedding. Apply sterile petrolatum as a local application to skin lesions.

4 Search for a focus of infection which may harbor sensitizing streptococci particularly in the upper respiratory passages. Have a consultant rhinologist lavage the anuses after radiography.

5 Even if the evidence is not conclusive be prepared to implement the allergic hypothesis by advocating surgery of possible foci. Consider carefully tonsillectomy antrotomy sphenoidectomy etc.

6 Have the consultant dental surgeon radiograph and examine the teeth. Be prepared to remove any suspicious teeth.

7 Institute antihistamine therapy using increasing oral doses of benadryl or pyribenzamine. Start with 200 mg daily and work up to 800 mg unless untoward responses intervene (p 4216).

8 Until preparations are commercially available make application for cortisone to Merck and Co Rahway N J or to Dr Chester S Keefer Chairman National Academy Allocation Committee 2101 Con

7 During convalescence and after at least three sterile blood cultures (but while the patient still has effectual blood penicillin levels) look for foci of infection especially in teeth and upper respiratory tract. Get dental and sinus radiographs and consult with dentist and rhinologist.

8 Remove infected foci if discovered. Preferably return to intravenous drip of penicillin (without heparin) for twenty four hours preoperatively and forty eight hours postoperatively. Preferably have consultant operate under local anesthesia.

9 Before termination of penicillin therapy estimate extent of cardiac damage. Get electrocardiogram and teleoroentgenogram in addition to a record of clinical findings. Caution the patient of recurrence. Emphasize that cure of subacute bacterial endocarditis does not relieve preexistent cardiac damage.

10 Frankly discuss with patient and family the prophylaxis of backward failure (p 945) and especially alterations in the Way of Life Institute symptomatic therapy for backward failure (p 948) if necessary.

Continuing Care (Unfavorable Course)

1 If laboratory reports a penicillin resistant organism or if blood cultures remain positive consider supplementation or substitution of other antibiotics notably aureomycin, chloramphenicol, streptomycin or sulfonamide. If there is choice prefer aureomycin and/or chloramphenicol since they are effective orally and produce minimum anti-therapeutic effects (p 4246). However if streptomycin or sulfonamides appears clearly superior in bacteriologic reports add or substitute either or both.

2 If aureomycin or chloramphenicol is chosen give a priming dose of 100 mg per kilo (7 gm or 28 products for average adult weighing 150 pounds). Instruct the patient to swallow 2 products every few minutes with milk, soup, ice cream or cream cheese. Every three hours thereafter night and day repeat the dose of 4 products (1 gm).

3 If streptomycin is indicated give a priming intramuscular injection of 1 gm. Maintain levels with 0.5 gm every six or eight hours closely observing vestibular and auditory mechanisms (p 4610).

4 If sulfonamide is suggested give a priming intravenous dose of 2.5 gm each of sodium sulfamerazine and sodium sulfadiazine. Closely observing blood and urine maintain high levels with oral doses of 0.5 gm of each every three or four hours for a total daily amount of 6 to 8 gm.

5 If during intravenous drip patient has an elevation of fever with or without a chill suspect embolization, exacerbation of the fundamental pathologic disturbance or reaction to antibiotic infusate.

(a) With evidences of embolization persist with antibiotic infusate and add heparin as described in Immediate Care (3).

(b) If fundamental disease appears active increase dose of antibiotic or supplement with another anti-infective agent as described in 2 and 3 above.

tive days if convalescence is uneventful Daily injections however are continued for at least forty eight hours beyond defervescence if the patient is febrile

2 For prevention of hypersensitivity phenomena due to antibiotic or invading microbe give antihistamine preoperatively and postoperatively (200 mg daily of pyribenzamine or benadryl) as soon as the patient can swallow Continue oral doses at least two weeks after last dose of antibiotic

Immediate Care

1 Pending full laboratory reports the patient is preferably hospitalized *Nonspecific measures* for treatment of the infected patient are inaugurated (p 68-73)

2 Introduce massive doses of penicillin sufficient to kill off resistant strains and to prevent organisms from developing bacterial immunity (p 4133) to antibiotic Set up an intravenous drip and infuse a priming or loading dose of at least 1 000 000 units of crystalline penicillin G in 1500 cc of physiologic saline (or distilled water if there are evidences of backward failure) at a rate of 1 cc per minute (1500 cc in 1440 minutes)

3 If difficulty is encountered with the drip in the nature of obstruction due to clot add heparin to infusate for its anticoagulant effect For each 500 cc of penicillin infusate use 10 cc or 100 mg of heparin sodium (Lederle Upjohn) or Liquaemin (Roche)

Caution DO NOT USE Heparin in Pitkin Menstruum intravenously

4 Start antihistamine giving 200 mg daily of pyribenzamine or benadryl orally if possible Otherwise inject 5 cc of 1% benadryl intramuscularly thrice daily

Continuing Care (Favorable Course)

1 Continue infusions of penicillin heparin for at least a week and preferably ten days if possible Change the needle to the other arm or a leg every forty eight hours if introduction is not too difficult Do not remove the functioning infusion until the new one is operating freely

2 Continue antihistamine

3 If heparin is used check coagulation time by simple bedside test once daily (p 4572) Discontinue anticoagulant temporarily if clotting does not occur within thirty minutes

4 Repeat blood culture after four days of treatment and weekly thereafter Caution bacteriologist to use penicillinase in medium

5 As soon as first sterile blood culture is reported (usually forty eight hours after sample is drawn) consider discontinuance of infusion if clinical course also is satisfactory Immediately assure maintenance of antibiotic levels by intramuscular deposits of 600 000 units of procaine penicillin G in oil with 2% aluminum monostearate (p 4453) every six hours for at least one week every eight hours for at least one week and every twelve hours for another month

6 Discontinue heparin when intravenous set is removed but continue antihistamine for at least two weeks beyond cessation of antibiotic therapy

fields and positive serologic tests for malignancy refer patient to neuro surgeon for review of neurologic status lumbar puncture (p 3781) and electro-encephalography

9 Refer patient for tracer diagnosis through use of radioactive isotope I^{131}

10 Consider exploratory craniotomy for removal of tumor if possible

11 If surgical excision cannot be accomplished give x ray therapy

THYROID

Practical Management

1 In our experience malignancy of the thyroid is exceedingly rare We have encountered only one proven instance in more than thirty years of clinical practice

2 We believe that the discrepancy between the frequent diagnosis of thyroid malignancy made by surgical pathologists and the infrequent appearance of fatal thyroid carcinomatosis in the autopsy room is the result of erroneous interpretation of microscopic slides

3 The statement that 10 to 15 per cent of thyroid adenomas become malignant cannot be true or practitioners and pathologists of experience would be frequent observers of fatality due to the neoplasm whereas even the seasoned internist and the highly experienced pathologist have difficulty recalling instances of fatality due to malignancy of the thyroid gland

4 The diagnosis of thyroid neoplasm must be considered when there are discrete nodules in the gland and with evidences of hyperthyroidism (p 1197) hypothyroidism (p 1191) or pressure disturbances involving the trachea (p 3512)

5 Under any of the above circumstances obtain blood for sero-diagnosis of cancer (p 4431)

6 Estimate the basal metabolic rate (p 719 and p 3738)

7 Get chest x rays in ordinary postero anterior views and in right and left anterior oblique positions to determine pressure on the trachea and the presence of sub-sternal or intra thoracic extensions

8 In the presence of a rapidly growing lesion of definitive tracheal pressure of positive serodiagnostic reactions for malignancy and particularly of uncontrolled hyperthyroidism refer the patient to a hospital equipped to make measurements of uptake of radioactive iodine I^{131}

9 Using I^{131} test sites of the body other than the thyroid gland for evidences of thyroid deposits

10 If the suspicion of malignancy persists insist on thyroidectomy approaching totality Postoperatively obtain treatment with I^{131} which then may be taken up by extrathyroidal metastatic deposits

PANCREAS

Practical Management

1 Note presence of uncontrolled hyperinsulinism (p 1242)

2 Look for a mass in the epigastrium (p 1814)

3 Obtain blood for sero-diagnostic reactions for malignancy (p 4431)

(c) If there are no evidences of embolization or advancing pathology suspect an untoward manifestation due to intravenous infusion (p 3775) or antibiotic. Discontinue the drip. Resort to intramuscular or oral doses.

6 When drip is discontinued if heparinization appears indicated to supplement antibiotic therapy deposit 300 mg of heparin in Pitkin Menstruum subcutaneously as elsewhere described (p 4203). Continue anticoagulant effect as indicated making deposits daily or every second day according to results of bedside coagulation test (p 4573).

7 At any time if indicated add 500 cc of citrated blood to the infusion to combat anemia or for tonic effect.

8 Obsolete are—human convalescent blood, human serum or blood from donors actively immunized against specific invader, streptococcus antiserum and streptococcus vaccines.

ENDOCRINES NEOPLASMS OF

Neoplasms of the organs of internal secretion may produce manifestations of *hyperfunction* (hyperpituitary gigantism, acromegaly and basophilism, paraneoplastic hyperinsulinism, adrenocortical virilism) *hypofunction* (pituitary dwarfism, pancreatic diabetes, adrenocortical Addison's disease) and they may become evident through pressure disturbances on contiguous structures (tracheal deviation from compression of the thyroid neoplasm or optic atrophy secondary to pituitary tumor growth).

In the presence of internal secretory disturbances the practitioner must determine (1) whether the dysfunction results from altered activity of tumor or non tumor tissue and (2) if neoplastic whether the lesion is benign or malignant.

ANTERIOR PITUITARY GLAND

Practical Management

- 1 Note manifestations of hypersecretion of *acidophile cells* including gigantism and acromegaly (Fig 238 p 1156 and Fig 239 p 1157).
- 2 Note manifestations of hypersecretion of *basophile cells* including pituitary basophilism or Cushing's disease (Fig 242 p 1161).
- 3 Note manifestations of anterior pituitary deficiency including pituitary dwarfism (Fig 247 p 1176), adipogenital syndrome of Frohlich (Fig 244 p 1168), Dercum's disease (adiposis dolorosa) (Fig 246 p 1175) or Simmonds disease (Fig 245 p 1171).
- 4 Collect blood for serodiagnosis of malignancy (p 4431).
- 5 X ray sella turcica (Fig 248 p 1177).
- 6 Refer patient to ophthalmologist for fundus examination and measurement of visual fields (Fig 240 p 1158 and Fig 241 p 1159).
- 7 Make routine survey of nervous system (Table 173 p 3584).
- 8 In the presence of evidences of an expanding lesion with increasing clinical manifestations, optic nerve involvement, narrowing of visual

during the time of exposure to allergen and for at least two weeks following last contact with the offending substance

4 For active treatment prescribe doses of antihistamine up to 800 mg daily and apply for cortisone to the Committee in charge of allocations headed by Dr Chester Keefer 2101 Constitution Avenue Washington 25 D C

EPIDEMIC KERATOCONJUNCTIVITIS

[Shipyard Conjunctivitis Epidemic Infectious Conjunctivitis
Keratitis Maculosa Keratitis Nummularis]

General Principles of Diagnosis and Therapy

1 Epidemic keratoconjunctivitis is a serious virus infection of the eye that may result in permanent visual defects (Fig 320 p 1624)

2 Before instituting therapy summon the consulting ophthalmologist

3 The virus causing epidemic keratoconjunctivitis is somewhat sensitive to aureomycin Local use produces approximately 60 per cent of cures

Practical Management

Prophylaxis

1 The high infectivity of epidemic keratoconjunctivitis requires that the patient be isolated and treated as one suffering from a systemic infectious disease (p 67) Not only must members of the household and immediate contacts be notified of the presence of the infection but also co workers since the virus often is transmitted by mutual handling of tools as in epidemics of shipworkers during World War II

2 Any article handled by the patient must be sterilized or destroyed

Immediate Care

1 Apply aureomycin hydrochloride ointment (3%) to eyelids and surrounding structures

2 Instill into each conjunctival sac 2 to 4 drops of aureomycin borate ophthalmic solution prepared by adding 5 cc of diluent (supplied by the manufacturer) to the vial containing 25 mg of antibiotic Repeat every two hours or oftener if the infection is severe keep ophthalmic solution in refrigerator and prepare fresh every second day Apply cold compresses to the eyes for ten minutes after instillations

3 Because of the severity and late sequels of the infection supplement local and topical antibiotic therapy with systemic doses of aureomycin or chloramphenicol Give approximately 50 mg per kilogram per day (12 capsules for average adult weighing 150 lbs)

4 In treatment of severe or resistant infections supplement local aureomycin with instillations of 15% sulfacetamide (sulamyd) and anoint lids with 1 2000 bichloride of mercury

4 In the presence of suspicious manifestations consider exploratory laparotomy for possible excision of a pancreatic adenoma or malignancy

PARATHYROID

Practical Management

- 1 Note symptoms of hyperparathyroidism (p 1225) including hypercalcemia (p 723) osteitis fibrosa cystica (p 1226) with ostealgia and pathologic fracture. (p 2846) and nephrocalcinosis (Fig 253 p 1228)
- 2 Palpate neck for swellings and tumors (p 3514)
- 3 Obtain blood for sero diagnosis of cancer (p 4431)
- 4 In the presence of persistent clinical manifestations and positive serologic findings consider exploratory procedure with removal of neoplastic tissue if feasible

ADRENAL MEDULLA AND CORTEX (P 1263)

Practical Management

- 1 Note symptoms due to hypersecretion of adrenal medullary substance including paroxysmal hypertension (p 1264) or of adrenocortical virilism (p 1268)
- 2 Note the effect of benodaine on hypertension as a specific test for adrenal medullary pheochromocytomas (p 4420)
- 3 Obtain blood for sero diagnostic tests of malignancy
- 4 Consider reference to the specialist for perirenal insufflation and x ray demonstration of deformities in the region of the adrenal cortex (p 2245 and p 2254)
- 5 In the presence of positive and persistent clinical findings with or without positive sero diagnostic reactions for malignancy consider exploration for possible removal of adrenal medullary or adrenocortical neoplasm

EOSINOPHILIC PNEUMONITIS

[Loeffler's Syndrome]

General Principles of Diagnosis and Therapy

- 1 Regard eosinophilic pneumonitis as a respiratory manifestation of allergic hypersensitivity (p 4167) It may result from exposure to antigens as diverse as pollens bacteria and the wax menstruum used for repository penicillin
- 2 In the majority of instances the patient afflicted with eosinophilic pneumonitis gives a history or presents findings of other hypersensitivity phenomena such as vasomotor rhinitis (p 2098) bronchial asthma (p 2101) and sputum eosinophilia
- 3 Strive to prevent eosinophilic pneumonitis by concurrent administration of antihistamines (200 mg daily of pyribenzamine or benadryl)

2 Immunization with so-called erysipelas vaccine accomplishes no useful purpose. If an attack with the living organism does not produce significant immunity, injections of dead organisms cannot be expected to accomplish this purpose.

Immediate Care

1 Inaugurate non-specific treatment of the infected individual (p. 67).

2 Deposit intramuscularly 600,000 units of procaine penicillin G in aqueous suspension.

3 Protect lesion with sterile dressing of petroleum jelly.

4 Warn members of the household and other contacts of the infectiousness of the lesion. Instruct them to avoid contact with patient, lesion, dressings and linen.

5 Start prophylactic antihistamine therapy giving 200 mg daily of pyribenzamine or benadryl.

Continuing Care (Favorable Course)

1 Maintain penicillin levels by making daily deposits of 300,000 to 600,000 units of procaine penicillin G in aqueous suspension.

2 Continue antihistamine for at least two weeks following last penicillin deposit.

Continuing Care (Unfavorable Course)

1 In the presence of sensitivity or resistance to penicillin, substitute aureomycin or chloramphenicol rather than sulfonamide. The latter is apt to cause toxic disturbances and delayed allergic hypersensitivity manifestations such as rheumatoid arthritis and periarteritis nodosa. Prefer oral doses of aureomycin or chloramphenicol using 50 to 75 mg per kilogram of body weight daily. For the average adult weighing 150 lbs, priming and daily doses are thus 3.5 to 5 gm (14 to 20 capsules). These may be given in 4 divided doses, i.e., 4 to 5 products every six hours.

2 If the patient is gravely ill and cannot swallow, inject 100 mg of aureomycin hydrochloride for intravenous use dissolved in 10 cc of 0.75% sodium carbonate, the diluent supplied by the manufacturer. If this is not available, substitute sulfonamide, giving a priming intravenous dose of 2.5 gm, each of sulfadiazine and sulfamerazine dissolved in 200 cc of sterile diluent (physiologic saline, 5% dextrose or preferably molar lactate).

3 As soon as the patient is able to swallow, substitute the combination of sulfadiazine and sulfamerazine orally in maintenance doses of 1 gm each every four to six hours, or switch to aureomycin or chloramphenicol using 50 to 75 mg per kilogram of body weight per day as described above.

4 Obsolete is heterologous antierysipelas serum. This preparation is not as effectual as antibiotics and carries the risk of acute hypersensitivity reactions (p. 4187).

EPIDEMIC PLEURODYNIA

[Bornholm s Disease Devil s Grippe]

General Principles of Diagnosis and Therapy

- 1 Infrequently observed in the United States the 1947 epidemic of pleurodynia in Massachusetts enabled Finn et al to study 114 patients (Arch Int Med 83 305 1949)
- 2 Efforts to isolate the virus proved unsuccessful
- 3 As in other epidemics the height of the disease occurred in July and August suggesting an insect vector possibly a mosquito
- 4 Clinical complaints were primarily chest pain headache cough anorexia nausea and chilliness
- 5 Prominent objective findings included fever friction rub limited chest expansion lymphadenopathy and abdominal rigidity
- 6 Positive laboratory information included leukopenia and relative eosinophilia Chest radiographs and cardiograms were uninformative
- 7 Complications included pericarditis and orchitis
- 8 All patients recovered without sequels
- 9 Treatment was symptomatic Use of aureomycin and/or chloramphenicol merits consideration

ERYSIPELAS

[St Anthony Fire]

General Principles of Diagnosis and Therapy

- 1 The diagnosis of erysipelas is made by its characteristic clinical appearance (p 167 Fig 19 p 165)
- 2 So successful is penicillin therapy that erysipelas has been reduced to a benign disease Control of acute phase ordinarily requires only antibiotic deposits and bland applications to local lesion
- 3 On rare occasions the etiologic hemolytic streptococcus produces systemic disturbances On that account the practitioner anticipates and strives to forestall inidious and delayed manifestations including scarlet fever post scarlatinal nephritis rheumatic fever and streptococcal bacteremia
- 4 The erysipelas producing streptococcus may behave as an offending bacterial antigen producing later tuberculin type allergic hypersensitivities (p 4169) To prevent delayed and potentially grave equals as far as is possible routine antihistamine therapy is warranted even in seemingly mild invasions

Practical Management*Prophylaxis*

- 1 Warn patient and attendants against auto inoculation through handling wound or dressings

7 In the absence of definitive evidences of sensitization to the protein of the tubercle bacillus follow steps suggested in management of erythema multiforme exudativum and erythema nodosum

ERYTHEMA MULTIFORME EXUDATIVUM

[Behçet's Disease Ectodermosis Erosiva Plurifacialis
Stevens Johnson Disease Reiter's Syndrome]

General Principles of Diagnosis and Therapy

1 A critical review of the various syndromes listed in the sub title indicates a marked similarity between each and all and suggests that the group is probably a single clinical entity characterized by a variety of lesions that occur in eyes mouth and genitals

2 Among clinical manifestations which each syndrome may reveal at one time or another are vesicobullous eruptions pseudomembrane formations erythema nodosum like lesions pyoderms maculopapular eruptions urticarias cheilitis gingivitis glossitis ulcerations of pharynx lips and tongue canker sores in mouth nonspecific urethritis herpes like vesicles of genitals balanitis vaginal and penile ulcers balanoposthitis tracheobronchitis pneumonitis bilateral relapsing conjunctivitis corneal ulcers hypopyon iritis episcleritis keratitis uveitis iridocyclitis choroiditis symblepharon neuroretinitis arthralgias and rheumatoid arthritis

3 From this tabulation of clinical manifestations it becomes apparent that the organism has a predilection for the tegumentary system and for mucous surfaces of upper digestive and respiratory tracts and for those of the reproductive systems both male and female

4 Characteristic of the various syndromes is the fact that laboratory examinations reveal nothing of importance Attempts to isolate possible pathogenic organisms have proven futile

5 There is more than a suggestion that each of the syndromes is a manifestation of allergic hypersensitivity For the present it seems worthwhile to treat the patient suffering from any of these syndromes as one who is afflicted with a perversion of mechanisms of bodily defense most likely against the protein of some living microbial invader

Practical Management

1 Question the patient concerning any previous manifestations of acute histamine type or chronic tuberculin type hypersensitivity (p 4169)

2 Particularly inquire into recent infection of upper respiratory passages

3 Look for foci of infection in nose accessory nasal sinuses prostate uterine cervix teeth and tonsils

4 Discovering a focus consider drainage or extirpation

5 Under any circumstance continue antihistamine for at least ten days after the last dose of antibiotic

6 Reexamine the patient after convalescence to detect any sequelae in blood urine or heart

7 In erysipelas involving the lower extremities look for an underlying dermatophytosis. If discovered treat with fungicide, to prevent recurrence

ERYSIPELOID

General Principles of Diagnosis and Treatment

1 Erysipeloid not to be confused with erysipelas ■ a relatively common cutaneous infection due to *Erysipelothrix rhusiopathiae*. The causative organism is a gram positive non spore forming bacillus

2 *Erysipelothrix* is penicillin sensitive in the test tube. Clinically satisfactory treatment results are obtained with moderate sized doses of antibiotic

3 Sulfonamides are ineffective. Heterologous immune serum (Pitman Moore) is relatively ineffectual as compared with penicillin and carries the hazard of hypersensitivity manifestations (p 4187)

4 Daily intramuscular deposits of 300 000 to 600 000 units of procaine penicillin G in aqueous suspension suffice for specific effect.

ERYTHEMA INDURATUM

[Bazin's Disease - Tuberculosis Indurativa Subcutanea]

General Principles of Diagnosis and Therapy

1 Regard erythema induratum ■ a cutaneous manifestation of chronic tuberculin type allergic hypersensitivity (p 4163) (Fig 953 p 3263 and p 3271)

2 Obtain chest film. Have sputum examined for tubercle bacilli and perform the cutaneous tuberculin test

3 If laboratory and clinical data suggest sensitization to the protein of tubercle bacillus treat patient as tuberculous (p 4597)

4 Additionally institute ■ trial with antihistamine prescribing 200 mg daily doses of pyribenzamine or benadryl

5 Consider desensitization with tuberculin (p 4608)

6 Supplement with large doses of calciferol. Prescribe oral tablets of 50 000 U.S.P. units (Kremers Urban) thrice daily or make daily intramuscular injections of 0.1 to 0.3 cc of a solution containing 500 000 units per cc (Kremers Urban). During calciferol therapy watch patient carefully for manifestations of hypercalcemia including nausea anorexia headache polyuria diarrhea crystalluria and nephrocalcinosis

ESTROGENS

1 Although a number of synthetic estrogens have been Council approved since the previous listing (Table 140 p 2515) none possesses significant advantages over those described. New products include *benzestrol* (Lederle) tablets of 2 and 5 mg *dinestrol* tablets of 0.1 and 0.5 mg (Rare Chemicals Carroll Smith White) *ethinyl estradiol* or *tinyl* (Schering) tablets of 0.02 and 0.05 mg *hexestrol* (Merrell and Massengill) tablets of 0.2 and 3 mg *monomestrol* or *mestilbol* (Wallace & Tiernan) in tablets of 0.25 to 5 mg *promethestrol dipropionate* or *meprane* (Reed & Carnrick) in tablets of 1 mg.

2 Synthetic preparations have the advantage of being more accurate and less expensive.

3 Unless there is reason for observing the patient personally estrogen therapy by mouth is advised. It is as effective as that given parenterally.

4 We find ourselves in complete agreement with the Council report that claims for therapeutic results (of estrogen therapy) have been often exaggerated and confusing. Definite and consistently reliable results have been obtained in only a relatively small number of conditions.

5 We rarely employ estrogens in the treatment of the female menopause (p 2525). Most symptoms respond to psychotherapy or administration of a simple sedative such as phenobarbital. In the rare instance where symptoms are persistent or incapacitating our preference is for injection or oral administration of androgen (p 4192). Male sex hormone is anticarcinogenic for the female as opposed to the potentially carcinogenic activity of estrogen in the female. Doses as small as 5 mg taken 3 times weekly usually suffice for symptomatic control without any hazard of masculinization (p 4194). If estrogen is used prescribe daily oral doses of 0.5 mg diethylstilbestrol or 0.02 mg estinyl for a limited period. Prolonged administration and/or rapid withdrawal may be responsible for significant uterine bleeding (p 2565 and 2567).

6 For treatment of atrophic vaginitis (p 2600) daily oral doses of 0.5 mg of diethylstilbestrol for several weeks suffice for symptomatic relief. Smaller quantities may be employed intravaginally if desired (0.2 mg of estrone at night).

7 In secondary amenorrhea (p 2618) in which estrogen is unfortunately useful in only a few amenorrheal women try intramuscular injections of 2.5 mg of estradiol benzoate and 12.5 mg of progesterone on two successive days. If parenteral medication is impractical prescribe orally 2 mg of diethylstilbestrol daily for fifteen days followed by 60 mg of pregnenolone daily for five days.

8 For postpartum inhibition of lactation prefer androgen (p 4194). If estrogen is substituted prescribe orally 1 mg of diethylstilbestrol 3 times daily for a week. Thereafter reduce daily dose to 1 mg for several days until lactation has been completely suppressed.

9 Kimbrough and Israel (JAMA 138 1216 1948) list several pre

5 Under any circumstance prescribe antihistamine orally using daily doses of 200 mg of pyribenzamine or benadryl (p 4213)

6 In the presence of active evidences of infection consider antibiotic therapy using feebly allergenic anti infective agents particularly aureomycin or chloramphenicol Avoid if possible hyperallergenic sulfonamides

7 In dealing with infections involving the eye use aureomycin borate in ophthalmic solution topically For systemic supplementation give aureomycin or chloramphenicol orally approximating doses of 25 to 50 mg per kilogram of body weight (2 to 4 capule four times daily)

8 With failure of antibiotic therapy using aureomycin and chloramphenicol resort to penicillin mindful of the fact that the latter is capable of producing acute histamine type hypersensitivities and that penicillin in large doses has been without appreciable effect

9 Against these unfavorable opinions relative to sulfonamide and penicillin note the statement of Wright (Arch Int Med 79 510 1947) who observed recovery following use of sulfonamides and penicillin administered systemically and topically in eight of nine patients

ERYTHEMA NODOSUM

General Principles of Diagnosis and Therapy

1 Erythema nodosum (Fig 989 p 3375) is probably a cutaneous manifestation of tuberculin type allergic hypersensitivity (p 4169)

2 The tubercle bacillus may be one of the provocative allergens but more often the offending substance is the protein of the hemolytic streptococcus or a drug antigen such as bromide iodide sulfonamide salicylate diphtheria antitoxin Frei antigen and other vaccines and serums (p 3380)

3 In a recent study of 155 patients 86 per cent were women About half of the afflicted had had a previous upper respiratory infection and 25 per cent harbored hemolytic streptococci in their throats Tuberculosis was an uncommon antecedent and rheumatic heart disease a rare sequel

4 We are inclined to agree with Reimann who states that erythema nodosum is probably a manifestation of hypersensitivity caused by a variety of infections and chemical agents conditioned by local trauma and personal predisposition

5 Prophylaxis is best accomplished by avoidance of provocative antigens particularly of the drugs above mentioned and by administration of antihistamine during the course of hemolytic streptococcal infection and for a period of at least two weeks thereafter

6 For active treatment additional administration of antihistamine is recommended with daily doses up to 800 mg of pyribenzamine or benadryl Locally lesions are protected by bland dressings and ointments avoiding further sensitization through use of potential allergens such as sulfonamide ointments iodine and the like

7 At the time of radical mastectomy consider surgical castration in women of child bearing age Otherwise advise irradiation of ovaries post-operatively Immediately start androgen therapy by mouth or preferably by injection

NEOPLASMS OF THE INTERNAL AND EXTERNAL FEMALE GENITALS

1 As part of the routine physical examination observe uterine cervix by vaginoscopy Try to avoid lubricants while introducing speculum

2 Note any vulvovaginal lesions (Figs 627 and 628 p 2552 Fig 631 p 2560)

3 Get blood for serodiagnosis of syphilis and malignancy (p 4431)

4 Always suspect venereal lesions Get darkfield examination for spirochetes (Fig 7 p 46) direct preads for Donovan bodies of granuloma inguinale (Fig 9 H p 48 and Fig 73 p 475) and Frei test (Fig 72 D p 470)

5 If findings are completely normal take a specimen for exfoliative cytodiagnosis by the method of Ayer (p 4430)

6 If there is visible ulceration or a demonstrable neoplasm obtain a specimen by method of Papanicolaou or by sponge biopsy technic (p 4430)

7 If there are positive findings by any method of cytodiagnosis insist on a surgical biopsy before proceeding further

8 With positive finding by any method arrange for a round table consultation with consulting surgeon and roentgen therapist Consider irradiation therapy alone by x ray or radium radical surgical excision with or without irradiation and with or without castration

9 Following vaginoscopy make a bimanual examination of internal genitals Question the patient concerning any change in menstrual cycle particularly stressing menorrhagia (p 2557) metrorrhagia (p 2557) and recently developing dysmenorrhea (p 2561)

10 In the presence of any positive findings consider diagnostic dilatation and curettage with microscopic examination of scrapings

11 In the presence of tumors or swellings involving uterus ovaries or fallopian tubes (p 2621) consider exploratory laparotomy

FILARIASIS

[Elephantiasis Elephantoid Fever]

General Principles of Diagnosis and Therapy

1 Invasion of human subcutaneous tissues by helminths (Fig 974 p 3320) produces filariasis (Fig 977 p 3323 Figs 975 and 976 p 3322) loiasis (Fig 978 p 3324 and Fig 979 p 3325) calabar swelling (p 3325) onchocerciasis or blinding filaria (Fig 980 p 3326) and dracontiasis (Fig 981 p 3327)

valent abuses in clinical applications of estrogen. These include failure to limit duration of treatment, rapid withdrawal after initiation, use in premenopausal men, menstrual irregularity, administration to patients with residual endometriosis, carcinomatous histories, palpable benign tumors of breasts or internal genitals, and those with hepatic insufficiency. These authors conclude their remarkably fine article with the statement that the regrettable use of estrogen as an all purpose female tonic is to be condemned.

10 In the male, estrogen may be used for treatment of the rare patient who suffers significantly from the male climacteric (p 2414). Additionally, estrogen therapy is of proven value in controlling the growth of generalized metastases from prostatic malignancy. However, even in the male, estrogen therapy may be carcinogenic, since patients have been reported with secondary malignancy of the breast unrelated to the primary prostatic cancer.

FEMALE REPRODUCTIVE SYSTEM NEOPLASMS OF

Accessibility of the structures of the female reproductive system affords the practitioner his best opportunity for early diagnosis of asymptomatic malignancy. The seasoned practitioner never omits palpation of the female breast, visual observation of uterine cervix, and bimanual palpation of uterus, adnexa, and pelvic peritoneum. In addition, spreads are made biannually of the uterine cervix for examination by Ayer or Papanicolaou techniques.

NEOPLASMS OF FEMALE BREAST

Practical Management

1 During each routine examination, palpate the female breasts. Perform palpatory transillumination in the darkroom, compressing mammary tissue over the source of light, noting any opaque areas.

2 If any palpable abnormalities are detected, refer the patient immediately to the specialist. Do not await the criteria of late malignancy (retraction of nipples, bloody discharge, and axillary lymphadenopathy). These last are actually late manifestations, and in their presence the chance for radical cure already has been significantly sacrificed.

3 Obtain blood for serodiagnosis of malignancy (p 1431).

4 Get chest x-ray for evidences of tuberculous infection, and for comparison later on suspicion of pulmonary metastases.

5 In the presence of positive findings, insist on exploratory procedure in order to obtain satisfactory tissue for microscopic diagnosis. Do not compromise on needle biopsy.

6 At the time of exploration, be prepared for radical surgery if microscopic examination is suspicious or definitively positive.

5 In convalescence suggest prophylactic use of insecticides to ward off mosquito fly and gnat vectors Warn patients with dracontiasis to avoid bathing in waters harboring infected crustaceans

FOOD ALLERGY

Food allergies are particularly common in pediatric practice where many children are found to be sensitive to proteins of milk and eggs Therapeutic objectives in the management of the allergic hypersensitivities include elimination of non-essential sensitizing agents substitution of a less sensitizing essential foodstuff for offending allergen desensitization or hyposensitization in the case of an essential food and prophylaxis and palliation with adrenergics and antihistamines

Principles of Diagnosis and Treatment

- 1 Identify offending allergen by history or elimination diets (p 562 and 683)
- 2 Verify inferential data with scratch tests if necessary (p 557)
- 3 Eliminate sensitizing ingestant (p 563)
- 4 If suspected food is essential as in the case of milk substitute goat's milk or preferably a milk free food made from soy beans (p 2754) or other proteins such as soybean mull soy and nutrigen
- 5 If manifestations of hypersensitivity persist after elimination or substitution prescribe antihistamine with or without adrenergic and/or procaine as in serum sickness (p 4519)
- 6 In the case of dissatisfaction with substitutes for an essential food stuff such as cow's milk try alimentary desensitization by ingestion of highly diluted antigen Begin with 1 drop in 1 quart (1000 cc) of water Increase by drop doses daily to tolerance Concurrently prescribe daily oral doses of histamine antagonists

FOOT AND MOUTH DISEASE

[Epizootic Eczema Epizootic Aphthae Aphthous Fever
Epizootic Stomatitis]

General Principles of Diagnosis and Therapy

- 1 Foot and mouth disease is caused by a dermatropic virus (p 437 and Fig 345 p 1672)
- 2 The affliction is of little clinical importance but of considerable veterinary significance when it involves cloven footed animals especially cattle pigs sheep and goats
- 3 Boiling or pasteurization of farm products controls the disease in the human population

2 The diagnosis of filariasis is made by finding microfilaria in circulating blood (p 3324) and by demonstration of skin sensitivity

3 Until recently treatment was both unsatisfactory and hazardous through necessary use of antimonials With introduction of hetrazan there is promise of greater efficacy with almost negligible toxicity

Practical Management

Immediate Care

1 Hetrazan (diethylcarbamazine) a commercially available preparation of 1 diethylcarbamyl 4 methyl piperazine hydrochloride is marketed in tablets of 50 mg (Lederle) For the average individual weighing 150 lbs three or four 50 mg tablets taken three times daily for twenty one days appears an optimum schedule

2 With this dosage microfilarial counts are reduced and after one week of treatment most blood specimens are completely clear

3 Systemic reactions to hetrazan are mild They include headache nausea and malaise

4 In some instances there may be aggravation of existing swelling fever and pain with simulation of an attack of filariasis A possible explanation for this recrudescence is hypersensitivity from release of filarial protein

5 Because of hypersensitivity reactions which may accompany hetrazan therapy simultaneously order antihistamine (200 mg daily of pyribenzamine or benadryl)

Continuing Care (Unfavorable Course)

1 Repeat hetrazan course after a few weeks if microfilaria reappear in the blood or symptoms recur Hetrazan also may be employed prophylactically at the beginning and end of mosquito seasons since the latter are the vectors which transmit the pathogen

2 Patients resistant to hetrazan must be given an antimonial preferably ethylstibamine (neostibosan Bayer 693) Prepare a 5% solution by dissolving 0.2 gm in 4 cc of sterile distilled water Inject this intravenously If there are no toxic symptoms increase the dose to 0.3 gm in 6 cc of distilled water and repeat daily for ten to seventeen days

3 If intravenous ethylstibamine injections are inconvenient or accompanied by reactions prepare a 25% solution by dissolving the contents of 1 ampul (containing 0.3 gm) in 1.2 cc of sterile distilled water Inject this intramuscularly in the same dose used for intravenous administration

4 If there is treatment failure with hetrazan and pentavalent antimonial try a trivalent preparation such as antiholamine (lithium antimony thiomalate) Inject intramuscularly 1.5 cc of 6% solution as a probatory dose If there are no toxic manifestations increase to 3 cc and give daily intramuscular injections for one month Should toxic manifestations of antimony poisoning arise use BAL as the antidote (p 4251)

technical facilities are completely inadequate the use of STB a trivalent derivative of acelarsons with the chemical formula 4-oxy 3 acetylaminophenylarsenoxide is advised

7 STB is given in a single daily dose of 10 to 20 mg per kilogram of body weight (0.7 to 1.4 gm for the average adult weighing 150 lbs) Doses are repeated daily for five days This amount produced cicatrization in infectious yaws and effective healing of fourteen of fifteen patients with crab yaws

FUMIGACIN

Fumigacin an antibiotic derived from *Aspergillus fumigatus* is under experimental investigation for the treatment of tuberculosis It is not commercially available

FUNGICIDES

The ideal fungicide for treatment of dermatophytoses should possess the following properties: Effective destruction of the pathogens nonirritability and nonantigenicity acidity and nonabsorbability

FUNGICIDES FOR TOPICAL USE

| Fungicide | Comment |
|---|--|
| Aluminum Acetate USP | See Burow's solution |
| Ammoniated Mercury USP | Use as USP 3 to 10% ointment when there is superimposed secondary infection, prefer less toxic bacitracin |
| Aureomycin Ointment N N R (3%) | Sensitization to aureomycin may preclude its use systemically when the need is greater Prefer bacitracin for topical use |
| Bacitracin N N R | Prefer for secondary bacterial infection reserve penicillin streptomycin and aureomycin for systemic use |
| Boric Acid USP | See Whitfield's ointment |
| Boric Acid USP | As 3% wet dressing or 10% ointment relatively ineffectual no advantage over saline solution and petroleum jelly respectively |
| Burow's Solution N F | 5% aluminum subacetate relatively ineffectual and somewhat irritating no advantage over saline solution as a wet dressing |
| Caprylic Acid | Effective non-toxic non-irritating and non-sensitizing fungicide One of the preferred products Prescribe as the commercial preparations sopronol or naprylate |
| Carbafurin N N R (Carbol fuchsin Paint) | Council-accepted fungicide containing 1% boric acid, 4.5% phenol 10% resorcinol 0.3% fuchsin 5% acetone and water Needlessly complicated though functionally attractive If used, apply to isolated lesions and opposing skin surfaces (interdigitally intercrurally etc) |

4 Ruthless slaughter of susceptible host is the most successful means of controlling epizootics (Waldmann)

5 Because the disease is benign in the human symptomatic therapy suffices (p 438) Severe invasions particularly in the debilitated merit therapeutic trial of aureomycin or chloramphenicol in doses approximating 25 to 50 mg per kilogram of body weight (2 to 4 products 4 times daily)

FRAMBESIA

[Yaws]

General Principles of Diagnosis and Therapy

1 As in the case of other treponematoses notably syphilis frambesia yields spectacularly to penicillin therapy

2 Both systemic manifestations and the characteristic dermatosis (Fig 50 p 352) respond rapidly though serology may remain positive for some time after lesions have healed

3 The conduct of penicillin therapy depends a great deal upon available facilities cost of therapy and patient cooperation Since the majority of those who suffer from yaws are ambulatory the simplest schedules provide most satisfactory over all results

Practical Management

1 If aqueous crystalline penicillin G is employed give intramuscular deposits of 100 000 units twice daily for ten days to total 2 400 000 units

2 Where the patient can only be seen once daily substitute crystalline procaine penicillin G in aqueous suspension and make daily deposits of 300 000 units for ten days

3 In outlying communities where patients have even greater difficulty in obtaining medical care use crystalline procaine penicillin G in oil with 2% aluminum monostearate While there are no current reports of treatment with this modality it is quite likely that two weekly injections for two or preferably three weeks will accomplish as much as the daily or twice daily injections of aqueous solutions or suspensions

4 Where there are no facilities for injection missionaries and lay public health officers may experiment with oral penicillin in probatory doses of 250 000 to 500 000 units once or twice daily for a ten day period

5 Reserve arsenotherapy for the rare penicillin resistant infection Give intravenously 60 mg of a preparation of arsenoxide either mapharsen or clorarsen Introduce arsenical three times weekly to total 180 mg for primary and secondary yaws Older infections require eight weekly intravenous injections with supplementary intramuscular deposits of bi methyl for an additional eight weeks

6 For mass therapy where cost is an important consideration and

FUNGICIDES FOR TOPICAL USE (Continued)

| Fungicide | Comment |
|--|--|
| Phenol U S P | Too toxic for local use |
| Salicylanilide | Particularly effective against <i>M. audouinii</i> and most useful in infections of hairy surfaces. See Salundek. |
| Salundek ointment (Wallace & Tiernan) | Contains 5% undecylenic acid 25% zinc undecylenate and 5% salicylanilide in a carbowax base with wetting agent. Especially useful in <i>T. capitis</i> . |
| Sopronol (Wyeth) | Commercial product containing propionate and caprylate available as ointment, solution and powder. Effective fungicide, non-toxic, non-irritating and non-sensitizing. |
| Streptomycin Ointment N N R | Sensitization may preclude later use as systemic anti-infective agent. Prefer bacitracin or tyrothricin. |
| Tar | Little fungicidal activity. Use only as keratolytic in chronic dermatitis. |
| T C A P Ointment (Wallace) | Commercial ointment containing 2.2% trimethylcetyl ammonium pentachlorophenate and 1% undecylenic acid. Effective, non-irritating, non-antigenic and effective fungicide. |
| Thymol | Mild fungicide, not comparable with Desenex or sopronol. |
| Timofax (Burroughs Wellcome) | 10% undecylenic acid powder and ointment. Effective, non-toxic, non-irritating and non-sensitizing fungicide. |
| Tyrothricin | Use as 2% solution or 0.5% cream as effective bactericide. |
| Undecylenic Acid | See Desenex. |
| Whitfield's Ointment | 6% salicylic acid and 12% benzoic acid. Mildly fungicidal but quite keratolytic and irritant. May produce maceration and treatment dermatitis. Prefer sopronol, Desenex, timofax and TCAP. |
| Zinc Undecate N N R | See Desenex. |
| X ray | For epilation in chronic persistent dermatophytoses. Rarely needed if there is intelligent fungicidal therapy and adequate patient cooperation. |

FUNGUS INFECTIONS

Superficial fungus infections (dermatophytoses) are seen as every day experiences in private practice. Experts with special laboratory facilities frequently recognize systemic mycoses in patients presenting puzzling respiratory, skeletal and articular syndromes.

DERMATOPHYTOSIS CUTANEOUS

The superficial dermatophytoses (p. 3293) include *ringworm of the body* (*tinea corporis*, *tinea circinata*, Fig. 962 p. 3294), *groin* (*tinea cruris*, *eczema cruris*, *Dhobie itch*, Fig. 963 p. 3295), *feet* (*tinea pedis*, *dermatophytosis pedis*, *athlete's foot*, Fig. 962 B p. 3294), *scalp* (*tinea capitis*, Fig. 962 F p. 3294), *beard* (*tinea barbae*, *tinea sycosis*, *barber's itch*, Fig. 964 p. 3303), *nails* (*onychomycosis*, Fig. 962 H).

FUNGICIDES FOR TOPICAL USE (Continued)

| Fungicide | Comment |
|---|--|
| Castellani Paint Ceepryn | See Carfusin Effective bactericide available as 1:1000 jelly or wet dressing not as effective as fungicides of choice |
| Chrysarobin U S P | Not particularly effective stains skin, capable of postabsorptive toxic effect after prolonged use not recommended |
| Circulin | New antibiotic not commercially available may have future possibilities as fungicide |
| Cresatin N N R | Potentially toxic cresol derivative (Meta cresylacetate) for application to limited areas as external auditory canal |
| Dalyde (Dibromsalicyl aldehyde) (Hynson) | Available as 2% ointment or powder for bactericidal activity in secondary infection some fungicidal efficacy but not comparable to preparations of choice |
| Danish Ointment | Essentially a sulfide has postabsorptive toxic potential after prolonged use not comparable to preparations of choice |
| Desenex N N R (Wallace and Tiernan) | Highly recommended commercial preparation of undecylenic acid available as 20% ointment and powder non allergenic non irritant and non productive of postabsorptive toxic effects after prolonged use one of the preparations of choice |
| Gentian Violet U S P (Methylrosanilin) | For local use in 1% solution in 20% alcohol fractionally attractive but distinctly not a preparation of choice use as carfusin |
| Ichthyol N F | Offensive preparation not particularly efficacious not recommended. |
| Iodine U S P | Locally destructive and keratolytic at most employ for occasional application to stubborn lesion not recommended for protracted use over extensive body surfaces |
| Methylrosanilin U S P Mercurials | See Gentian violet May cause contact dermatitis local irritation and postabsorptive toxic manifestations after prolonged use not recommended |
| Naprylate (Strasenburgh) | Commercial preparation containing mixture of sodium and zinc caprylates Available in ointment powder and 20% solution A preparation of choice because of fungicidal activity uncomplicated by local irritation antigenic potential or postabsorptive toxic effects after prolonged use |
| Pragmatar | A non staining tar distillate that does not compare for fungicidal activity with preparations of choice use for symptomatic relief of subacute or chronic dermatitis accompanying fungus infection |
| Propionic Acid | Essential ingredient of sopranol effective and favored fungicide |
| Reorgan N F | Not particularly effective as a fungicide capable of postabsorptive toxic effect after prolonged use not recommended |
| Penicillin Ointment U S P | Capable of sensitization precluding later use in more serious infections prefer bacitracin |
| Petrolatum U S P | Sterile best bland ointment for protective use in subacute and chronic dermatitis accompanying fungus infections |

Acidity since fungi thrive in an alkaline medium

Nonabsorbability since treatment must be prolonged and repeated without hazard to host tissues

Of the listed preparations these exacting qualifications are best met by caprylic undecylenic and propionic acids available in the commercial preparations sopronol desenex timofax naprylate and TCAP and in more recently introduced products containing salicylanilide especially useful in the management of infections of the hirsute skin

Relatively feeble are many popular preparations such as boric acid Burow's solution ichthyol tar and thymol excessively irritating are mercurials iodides phenols (cresatin) dyes (gentian violet chrysa robin) sulfides (Danish ointment) resorcin and salicylic and benzoic acids (Whitfield's ointment) With the preferred fungicides bacitracin or tyrothricin is useful as the topical bactericide reserving penicillin aureomycin and streptomycin for systemic use when the need is greater

Practical Management

1 Cleanse skin thoroughly with soapless detergent (acidolate aquaphor dermolate lowila phisoderm) Avoid alkaline soaps

2 If there are evidences of a treatment dermatitis or excessive maceration and scaling postpone use of fungicide until local irritation has subsided under the influence of dressings of sterile saline solution milk or petrolatum

3 If there is significant bacterial secondary infection particularly with lymphangitis or lymphadenitis concentrate on bactericides using bacitracin or tyrothricin locally as ointment or wet dressing Deposit 300 000 to 600 000 units of procaine penicillin G in aqueous suspension once daily

4 When treatment dermatitis and secondary bacterial infection have abated apply fungicide using nonirritating hypoallergenic preparations such as desenex sopronol naprylate timofax or TCAP If lesions are moist use fungicide in ointment form and separate opposing skin surfaces with wisps of cotton or lamb's wool If lesions are dry use powder but prevent caking by separation of surfaces as described above

5 Protect sterile dermatophytids with sterile petrolatum antihistaminic or fungicidal ointments Administer antihistamine daily in 200 mg doses of pyribenzamine or benadryl

6 Instruct patient in methods of avoiding reinfection boil linen especially socks apply fungicidal powder to shoes (p 3308) treat other members of household or other contacts in industry (dressing rooms lavatories etc)

7 Prevent autoinoculation by thorough hand washing after handling infected parts

8 Insist on weight reduction in the obese suffering from crotch inframammary or interdigital fungus infections

9 Treat irritating discharges that tend to favor fungus growth These include leukorrhea and other vaginal discharges moisture in

p 3294) *external auditory canal* (otomycosis myringomycosis p 3305) *axillary hair* (leptothrix trichosis axillaris p 3305) *tinea versicolor* (pityriasis versicolor; chromophytosis Fig 962 D p 3294) *erythrasma* (p 3301) *tinea imbricata* (p 3307) *moniliasis* (Fig 962 E p 3294) and *favus* (Fig 962 G p 3294)

General Principles of Diagnosis and Therapy

1 Fungi are universally distributed in nature. They may produce cutaneous disturbances on any body surface but most particularly where opposing dermal segments provide moisture and maceration favorable for mycotic growth.

2 Growth of fungi is best accomplished in an alkaline medium. Hence alkaline soaps, particularly with incomplete drying of inaccessible areas such as those between fingers and toes and in the crotch, favor dermatomycosis.

3 Fungus infections stimulate a feeble immunity mechanism at best. Hence they are prone to be recurrent.

4 Fungus infections in the hypersensitive often produce sterile dermatophytids. These allergic hypersensitivities do not respond to fungicidal therapy; they may be intensified by allergenic fungicides and they persist for as long as fungi are present on any body surface.

5 Fungus infections are often complicated additionally by bacterial invasions, usually pyogenic.

6 In view of these circumstances, mere application of fungicide, no matter how effectual, is insufficient to control dermatophytosis. The patient complains of persistence of infection, re-infection, or recurrence. With these, there is a justifiable demand for use of stronger preparations which usually produce treatment dermatitis, providing additional moisture and maceration favorable to fungus growth.

7 In the fully developed form in which the patient usually abandons self-treatment and seeks professional advice, there is the formidable combination of dermatophytosis, dermatophytid, secondary bacterial infection, and treatment dermatitis.

8 Preliminary to treatment of the initial fungus infection, the practitioner must rid his patient of treatment dermatitis and secondary bacterial infections. Only then is it possible to attack the dermatophytosis and its secondary dermatophytids.

9 There is no dearth of effectual fungicides for topical use on body surfaces and on accessible body cavities. Disappointments in practice may be attributed essentially to misunderstanding of therapeutic principles (p 4170) rather than any lack of potency of preparations currently available.

The Ideal Fungicide Ideally the fungicide for treatment of dermatophytoses must possess the following properties:

Effective destruction of the pathogens

Nonirritability, since maceration and scaling invite fungus growth

Nonantigenicity, since many patients already have developed hypersensitivity to the fungus in the nature of dermatophytids (Fig 962 C p 3294, Fig 1121 L p 1121)

taken from sinus pus or sputum with or without addition of a few drops of 10% sodium hydroxide (Fig 75 p 486 Fig 76 p 487) Direct examination may be supplemented by gram stains which show gram positive delicate branching filaments. Additionally *Nocardia asteroides* is somewhat acid fast.

6 Less reliable than direct examination are culture methods. While most yeast like and mold like fungi grow on Sabouraud's glucose agar 1% dextrose agar and standard blood agar at room or incubator temperatures direct spreads may be positive with negative cultures. Rarely is the contrary true.

7 In the case of *Actinomyces bovis* enriched anaerobic media are required. Smith recommends veal infusions and brewer's thioglycollate medium.

8 The diagnosis may be confirmed by biopsy through identification of the pathogen in sections and by cultures taken from deeper tissues.

DIAGNOSTIC PROCEDURES IN SYSTEMIC MYCOSES

| Fungus Disease | Direct Spread (A) | Culture (B) | Biopsy | Skin Sensitivity (1:1000) (C, D) | Complement Fixation (E) |
|---------------------|-------------------|-------------|--------|----------------------------------|-------------------------|
| Actinomycosis | + | Enriched | + | + | 0 |
| Aspergillosis | + | + | + | 0 | 0 |
| Blastomycosis | + | + | + | + | + |
| Candida (Moniliae) | + | + | + | + | 0 |
| Chromoblastomycosis | + | + | + | + | 0 |
| Coccidioidomycosis | + | + | + | + | + |
| Cryptococcosis | | | | | |
| (Torulosis) | + | + | + | + | 0 |
| Geotrichosis | + | + | + | + | 0 |
| Histoplasmosis | + | + | + | + | + |
| Maduromycosis | + | + | + | + | 0 |
| Mucormycosis | + | + | + | + | 0 |
| Nocardiosis | + | + | + | + | 0 |
| Penicilliosis | + | + | + | + | 0 |
| Rhinopneumonitis | + | 0 | 0 | 0 | 0 |
| Sporotrichosis | + | + | 0 | + | 0 |

Notes

- The finding of candida, geotrichum, aspergillus, penicillium and mucor does not establish a diagnosis in the direct spread since these fungi may be accidental findings or secondary invaders. All others may be regarded as of primary etiologic significance.
- Cultures must be kept and examined for at least thirty days before being discarded.
- Skin tests have the same limited significance in the diagnosis of systemic mycoses as in the diagnosis of tuberculosis. They indicate merely that the patient has become sensitized to the fungus, not necessarily that the individual is suffering actively from a fungus invasion.
- Cross reactions occur with coccidioides, histoplasma and blastomycosis. With doses of 1:1000, however, much of the non-specific substance giving cross reactions is eliminated.
- Complement fixations in the systemic mycoses are subject to the same interpretations as complement fixing bodies in syphilis. They merely indicate that the patient has developed immune bodies to the antigen of the microbe, not necessarily that presenting symptoms are related to the invader. Cross complement fixations occur in patients with a high titer of antibody to histoplasma.

the anal region from hemorrhoids or hemorrhoidal tabs aural discharges in otomycosis etc

10 Prevent hyperhidrosis particularly of hands feet and axillary regions using local applications of 25% aluminum acetate

11 Prevent maceration of hands particularly in dish washing where use of gloves is recommended

12 For fungus infections of hirsute skin prescribe a preparation containing salicylanilide (salundek contains 5% undecylenic acid 25% zinc undecylenate and 5% salicylanilide in a carbowax base with a wetting agent) Clip hair in infected area as short as possible shampoo scalp each night with any soapless detergent above mentioned then rub a liberal amount of fungicide into infected area and over a wide margin of surrounding scalp repeat application next morning Continue treatment for at least two months during which time the patient wears a tight fitting cap at all times Frequently during course of therapy remove loosened infected hairs manually

SYSTEMIC MYCOSES

General Principles of Diagnosis and Therapy

1 A 15 year study of deep fungus infections by Smith of Duke University in Durham North Carolina emphasizes the relative frequency of systemic mycoses Based on 250 000 consecutive admissions to the University Hospital deep fungus infections occurred in the ratio of 1 10 relative to pulmonary tuberculosis 1 2 relative to bronchiectasis and 2 3 relative to pulmonary abscess They were seen much more commonly than certain diseases which command considerably more attention in medical teaching and writing such as polycythemia hemophilia Addison's disease acromegaly and hemochromatosis

2 With overwhelming frequency invasions are caused by actinomyces blastomyces and monilia Of these leading three actinomyces and monilia are endogenous and appear countrywide in like proportions The frequency of exogenously derived blastomyces (from soil or dirt) in the Carolina area is due to the fact that southeastern states are endemic areas for this particular fungus

3 In both endogenous and exogenous fungus infections males predominate The disproportion is no greater than with other systemic diseases in endogenous systemic mycoses but reaches a remarkable disproportion in exogenous types e.g. 9 1 for blastomyces and maduromycosis 34 1 for chromoblastomycosis and 7 1 for histoplasmosis

4 Countrywide systemic mycoses of endogenous origin are relatively uniformly represented in statistical studies Of exogenous types however coccidioidomycosis is seen most frequently in California Arizona New Mexico southwestern Utah and southwestern Texas histoplasmosis in the lower two thirds of the Mississippi valley the Ohio river valley and the region of the Appalachians blastomycosis in the Mississippi valley in the southeast chromoblastomycosis maduromycosis and rhinosporidiosis in the south

5 The diagnosis is established best by direct examination of spreads

500 000 units of crystalline penicillin G in tablet form twice or thrice daily or make daily intramuscular deposit, of 300 000 to 600 000 units of procaine penicillin G in aqueous suspension if patient can be seen that frequently or for the patient who finds difficulty coming daily for treatment introduce intramuscularly 600 000 units of procaine penicillin G in oil with 2% aluminum monostearate every second or third day for three or four injections

2 Concurrently with penicillin and for at least two weeks thereafter prescribe antihistamine using daily doses of 200 mg of pyribenzamine or benadryl

Continuing Care (Favorable Course)

1 During convalescence survey infected areas for foci which may conceivably harbor Vincent organisms Pay particular attention to teeth and gums Refer the patient to dentist for general hygiene treatment or removal of carious teeth and correction of areas of redundant gum particularly in the region of rear molars Consider tonsillectomy in those with buried or enlarged tonsils with deep crypts containing inspissated matter

Continuing Care (Unfavorable Course)

1 In the rare instance of penicillin sensitivity or resistance substitute aureomycin in doses approximating 25 to 50 mg per kilogram of body weight (8 to 16 products each of 250 mg for average adult weighing 150 lbs)

2 As third choice resort to supplementary arsenotherapy Give intravenous injections daily or every second day for a total of four or five injections of 60 mg of mapharsen or clorarsen Remember that the arsenoxides may cause toxic responses (p 122) Should these appear inject BAL as effective antidote (p 4251)

3 To avoid confusion in interpretation of untoward manifestations confine local therapy to washes of hydrogen or zinc peroxides

GAMMA GLOBULIN FRACTION

[See also Blood]

Available Products

Human Serum Immune Gamma Globulin Fraction U S P (Cutter Wyeth Lederle)

Therapeutics

Human serum immune gamma globulin fraction contains concentrated antibody It is used for passive immunization in certain communicable disease notably measles mumps pertussis and virus hepatitis

9 As to therapy Smith reports encouraging but variable specific therapeutic effect from potassium iodide in actinomycosis aspergillosis blastomycosis moniliasis chromoblastomycoses cryptococcosis (torulosis) geotrichosis maduromycosis mucormycosis nocardiasis and penicilliosis. He notes as do other observers that hypersensitive patients may be worsened by iodide and require desensitization with vaccines before iodide therapy is resumed. In no instance is the specificity of iodide such as to preclude the use of other available measures.

10 Smith reports some encouraging responses to sulfonamide and penicillin. Actinomycosis responds unevenly to sulfonamide and penicillin. South American blastomycosis to sulfonamide cryptococcosis (torulosis) nocardiasis and sporotrichosis to sulfonamide given in large doses for a long period of time.

11 Vaccine therapy is available for any organisms that can be cultured if they accomplish nothing more vaccines reduce hypersensitivity reactions in those who respond poorly to iodide therapy.

12 For practical management of specific systemic mycoses consult the material for each individual invader i.e. actinomycosis coccidioidomycosis etc.

FUSOSPIROCHETOSIS

[Vincent's Infection]

General Principles of Diagnosis and Therapy

1 In the management of fusospirochetosis the practitioner is faced with the dual problem of ridding his patient of acute manifestations and of instituting measures to prevent recurrence.

2 The invasive micro organisms are sensitive to penicillin aureomycin and arsenicals each of which may be used topically or systemically.

3 Prevention of recurrence is dependent upon removal or excision of necrotic tissue upon which organisms depend for continued existence. Most often suitable areas for microbic growth are found under redundant gums around areas of pyorrhea in carious teeth and in tonsillar crypts. Inasmuch as these nests are relatively inaccessible to topical applications during acute phases of the disease prefer systemic administration of antibiotics. Since recurrence of fusospirochetosis is the rule rather than the exception resort to extensive dental hygienic measures or surgical extirpation accompanied by prophylactic antibiotic therapy in convalescence.

Practical Management

Immediate Care

1 Place main reliance on penicillin. For reasons above mentioned and because of greater incidence of sensitization phenomena from local use of antibiotic prefer systemic administration. Order oral doses of

Available Products

Garlicin is not yet commercially available

Pharmacology

Garlicin inhibits growth of bacteria of the colon group. It is not inactivated by body fluids, ultraviolet irradiation, or heating to 70° F. Sulfonamides appear to increase its activity.

Given orally, garlicin enters the blood without penetration into red cells. It diffuses into the cerebrospinal fluid and is eliminated in bile and urine. It is demonstrable in the urine two hours after administration. Elimination reaches a maximum during the sixth hour and decreases rapidly by the end of the day.

Therapeutics

Over 300 patients with acute and chronic enterocolitis have been treated with garlicin. Those infected with *Shigellae* showed frank improvement or disappearance of intestinal symptoms by the second day and bacteriologic cure in 12 days. Patients with *Salmonella* infections (p. 4511) were improved on the second or third day and bacteriologically cured in nine days.

It is suggested that a large dose be given on the first day with decreasing amounts on subsequent days. For example, 20 units every two hours the first day, 20 units every three hours on the second, third, and fourth days, 20 units every four hours on the fifth, sixth, and seventh days, 20 units morning and evening on the eighth and ninth days and thereafter when necessary.

Toxicology

Garlicin is practically nontoxic. Given in doses up to 700 times the maximum therapeutic amount, it does not produce untoward effects.

GAS GANGRENE

[Clostridiosis]

General Principles of Diagnosis and Therapy

1. No preparation is available for long term prevention of gas gangrene similar to the prophylactic usefulness of tetanus toxoid for establishment of active immunity.

2. Parenteral use of penicillin has reduced both the mutilation and mortality of gas gangrene. Optimum results are obtained when the antibiotic is used with antitoxin supplemented when necessary by thoughtful conservative surgery.

3. The chart of the various official preparations of gas gangrene antitoxin reveals that maximum protection is afforded by the combination of pentavalent gas gangrene antitoxin together with tetanus antitoxin. Bivalent and trivalent combinations afford no protection against

Each 2 cc of the commercial preparation is the equivalent of 40 cc of original plasma. For prevention of measles give 0.1 cc per pound of body weight intramuscularly for modification of measles inject 0.02 cc per pound of body weight to prevent or modify virus hepatitis inject 10 cc intramuscularly in the preicteric phase if possible to prevent mumps complications inject 40 cc intramuscularly for prevention or treatment of pertussis give 2.5 cc intramuscularly.

If human serum immune gamma globulin fraction is not available substitute human immune globulin extracted from placenta. Of this give doses at least in multiples of four.

GANTRISIN (NU 445)

Gantrisin is a newly developed sulfonamide whose chemical formula is 3,4-dimethyl-5-sulfanilamido isoxazole.

Available Products

Gantrisin Tablet 0.5 gm (Roche)

Pharmacology

Gantrisin has a high solubility over a wide pH range. It does not form concretions and is less toxic than other sulfonamides. Its bacterial spectrum parallels that of sulfadiazine (p 4548). It is highly effective against hemolytic streptococci and *Streptococcus viridans* but is relatively ineffective against *Streptococcus fecalis*.

Therapeutics

Gantrisin has been used mostly in the treatment of urinary infections. Given in oral doses of 1 to 2 gm every six hours or by intramuscular or intravenous injection in high concentration (4 gm in 10 cc) it prevents streptococcal bacteremia following tooth extractions. In urinary sepsis it is highly effective against *E. coli*, *Proteus*, *Alkaligenes*, *A. aeruginosa* but ineffective against *Streptococcus fecalis* and *Pseudomonas* which are highly resistant.

Toxicity

From available evidence gantrisin is comparatively less toxic than related soluble sulfonamides. In the experience of Dowling (Am J Med Sci 218:136, 1949) untoward manifestations occurred in 4.2% of patients given gantrisin as contrasted with 8.1% from sulfadiazine and 10% from sulfamerazine.

GARLICIN

Garlicin is an antibiotic extracted from garlic.

caine penicillin G in oil with 2% aluminum monostearate once or twice daily according to severity of infection and patient response

2 Since the purpose of antitoxin therapy is to neutralize toxin elaborated by *Clostridia* before anti-infective capacities of penicillin have been established continued serum therapy appears unnecessary once high levels of antibiotic have been established

3 Continue antihistamine throughout the course of anti-infective therapy and for a period of at least two weeks after administration of the last dose

4 In the face of worsening conditions re-establish intravenous drip and give massive penicillin therapy using as much as 25 000 000 units of crystalline penicillin G each twenty-four hours diluted to approximately 2000 cc with 5% dextrose in physiologic saline

GAS GANGRENE ANTITOXINS

| | Cl per fringens (welchii) | Cl sep- ticum | Cl. oede- matens (novyi) | Cl. bifer- mens (sordelli) | Cl. histo- lyticum | Cl. te- lanus |
|--|---------------------------------|------------------|--------------------------------|----------------------------------|-----------------------|------------------|
| | unit per cc | | | | | |
| Bivalent gas gan- grene (Lilly) | 10 000 | 10 000 | — | — | — | — |
| Trivalent gas gan- grene USP (National Drug Parke Davis Squibb Wyeth) | 10 000 | 10 000 | 1 500 | — | — | — |
| Pentavalent gas gangrene USP (Lederle) | 10 000 | 10 000 | 1 500 | 1 500 | 3 000 | — |
| Tetanus-gas gan- grene combined USP (Cutter Lederle National Drug Lilly Squibb Parke Davis Wyeth) | 2 000 | 2 000 | — | — | — | 1 500 |

GASTRIC ANTACIDS

Non-absorbable gastric antacids (p 1755) continue to find greatest favor in the treatment of functional gastric hyperacidity and in the management of peptic ulcer (p 1791). Although the market continues to be flooded with widely advertised preparations the Council on Pharmacy and Chemistry has accepted only the following preparations in addition to those previously listed (p 1754). Most of the more recently accepted products have as their base amphoteric aluminum salts as oxides, phosphates or amino acetates (glycine).

Cl bifermentans and Cl histolyticum while tetanus gas gangrene combined contains insufficient doses of tetanus antitoxin and bivalent products of gas gangrene

4 Prompt and efficient combined anti infective therapy using penicillin and antitoxin is so highly effective that Anderson and Keefer 1948 state that surgery for the purpose of controlling infection is rarely indicated when penicillin is administered it seems likely that the use of surgery in the treatment of gas gangrene will be limited to removal of avascular tissue into which penicillin cannot penetrate The use of antitoxins to neutralize toxins already in the blood and tissues may serve as an important adjunct to this drug (penicillin)

* the effectiveness of penicillin as an antibacterial agent introduce the distinct likelihood that radical surgical procedure such as amputation of an extremity can be largely obviated in the treatment of clostridial infections Antitoxin remains a useful adjunct to penicillin therapy

Practical Management

Immediate Care

1 On suspicion of gas gangrene set up an intravenous drip and give a loading dose of 1 000 000 units of crystalline penicillin G

2 While the penicillin drip is in operation question the patient concerning a history of hypersensitivity reactions or of previous serum injections (p 4187) Meanwhile test with 1:10 horse serum in the conjunctival sac and intracutaneously for objective evidences of hypersensitivity

3 In the presence of manifestations of hypersensitivity desensitize with progressively increasing doses of horse serum given intracutaneously and subcutaneously as elsewhere outlined (p 4191)

4 As soon as it appears safe add gas gangrene antitoxin well diluted to the intravenous drip The preparation of election is penta valent gas gangrene antitoxin supplemented with tetanus antitoxin if there is suspicion of a mixed infection Only in this way is it possible to deliver effective doses of antibody against all members of the family of Clostridia

5 For prophylaxis of hypersensitivity reactions introduce 5 cc containing 50 mg of benadryl solution into the intravenous drip or deposit intramuscularly Concurrently if the patient is able to swallow prescribe 50 mg of pyribenzamine or benadryl every four hours for at least two weeks after the last dose of anti infective agent has been administered

6 If possible summon the consulting surgeon for a decision concerning treatment of the wound If consultation cannot be arranged lay the wound open under anesthesia and arrange for irrigation with half strength hydrogen or zinc peroxide

Continuing Care

1 Maintain penicillin levels by continuation of the intravenous drip or if this is impossible deposit intramuscularly 600 000 units of pro

GENTIAN VIOLET

[Methylrosaniline]

A triphenylmethane rosaniline dye used as anthelmintic in the treatment of oxyuriasis (pinworm p 1902) strongyloidiasis (p 1905) and clonorchiasis (p 4288)

Available Products

Tablet. *Gentian Violet* (enteric coated) II NR 30 mg (1½ hour Seal in) for strongyloidiasis (4 hr Seal in) for oxyuriasis (National Aniline)

Therapeutics

Two tablets (60 mg) every four hours for eight to seventeen days After one week repeat course if necessary

Toxicology

See p 1895

GEOTRICHOSIS

General Principles of Diagnosis and Therapy

1 Because of the rarity of systemic geotrichosis reports have not yet been made available as to the efficacy of newer anti infective agents Certainly if the practitioner encounters a proven example of this systemic fungous disease (p 505) procedures suggested for actinomycosis (p 4141) or coccidioidomycosis (p 4289) merit consideration

2 For local application paint cutaneous and mucosal lesions with 1% gentian violet

3 In the presence of intestinal lesions prescribe tablets of gentian violet Order 2 tablets (60 mg) every four hours for no less than two w

es of saturated potassium iodide and intravenous injection of sodium iodide have been recommended in geotrichosis as in other mycotic diseases Whether iodide possesses any curative value is doubtful

Therapy of geotrichosis is suggested as in blastomycosis

GIARDIASIS

Intestinal tract with *Giardia lamblia* (Fig 431) manifestations of enterocolitis

best managed in the manner of amebiasis with quinacrine and/or carbarsone separately or in combination as outlined in detail (p 4183)

GASTRIC ANTACIDS

| Preparation | Action and Dosage | Council approved Available Preparations |
|---|--|---|
| Aluminum Hydroxide Gel N N R (an aqueous solution containing 3 to 4.4% of aluminum hydroxide with flavoring sweetening and preservative) | Effective antacid does not increase pH sufficient to interfere with peptic digestion does not stimulate rebound compensatory increase in free hydrochloric acid does not produce systemic alkalosis ■ mild astringent and demulcent favoring mucous coating of inflamed or ulcerated mucosa also tends to produce constipation non toxic though prolonged use of large doses may interfere with absorption of mineral and produce a phosphorus deficiency U ■ in doses of approximately 1 to 2 teaspoonfuls in a half glass of water or milk every two to four hours may also be given by continuous intragastric drip in dilutions of one part of aluminum hydroxide gel to two or three parts of water at the rate of 15 to 20 drops a minute to total 1500 cc of diluted suspension for twenty four hours | Gel Aluminum Hydroxide (Barlow Maney MacAllister Reserve Research Co Korer Schuellein and Upjohn) Creamalin (Winthrop Stearn) |
| Aluminum Phosphate Gel USP (contains 3.8 to 4.2% of aluminum phosphate with flavoring sweetening and preservative) | Has antacid astringent and demulcent properties analogous to aluminum hydroxide does not interfere with phosphate absorption acid combining power approximately half that of aluminum hydroxide gel prescribe 4 to 8 teaspoonfuls alone or with water or milk as with gel aluminum hydroxide | Phosphaljel (Wyeth) |
| Dihydroxyaluminum Amino Acetate N N R | Shares properties of aluminum hydroxide gel may be prescribed in more convenient tablet form less astringent and hence less constipating buffering action slightly more prompt prescribe 1 to 2 tablets after meals and at bedtime | Alglyn (Brayte) Aspogen (Eaton/Alzinor) (Patch) 0.5 gm Tablets |
| Mucin Aluminum Hydroxide Magnesium Trisilicate N N R (Gastric Mucin 0.16 gm Dried Aluminum Hydroxide Gel 0.25 gm Magnesium Trisilicate 0.45 gm with excipients and flavoring) | Histamine free gastric mucin ■ provides protective coating rapidly reacting aluminum hydroxide and more slowly reacting magnesium trisilicate give a mixture with advantages of both a ■ acids magnesium trisilicate counteracts constipating action of aluminum hydroxide Dose 2 tablets well chewed, every two hours without fluids during the following half hour | Mucotin (Harrower) |

GENTIAN VIOLET

[Methylrosaniline]

A triphenylmethane rosaniline dye used as anthelmintic in the treatment of oxyuriasis (pinworm p 1902) strongyloidiasis (p 1905) and clonorchiasis (p 4288)

Available Products

Tablets Gentian Violet (enteric coated) NNR. 30 mg (1½ hour Seal in) for strongyloidiasis (4 hr Seal in) for oxyuriasis (National Aniline)

Therapeutics

Two tablets (60 mg) every four hours for eight to seventeen days After one week repeat course if necessary

Toxicology

See p 1895

GEOTRICHOSIS

General Principles of Diagnosis and Therapy

1 Because of the rarity of systemic geotrichosis reports have not yet been made available as to the efficacy of newer anti infective agents Certainly if the practitioner encounters a proven example of this systemic fungous disease (p 506) procedures suggested for actinomycosis (p 4141) or coccidioidomycosis (p 4289) merit consideration

2 For local application paint cutaneous and mucosal lesions with 1% gentian violet

3 In the presence of intestinal lesions prescribe tablets of gentian violet Order 2 tablets (60 mg) every four hours for no less than two weeks

4 Oral doses of saturated potassium iodide and intravenous injections of sodium iodide have been recommended in geotrichosis as in other fungous diseases Whether iodide possesses any curative value is dubious

5 Vaccine therapy of geotrichosis is suggested as in blastomycosis (p 4255)

GIARDIASIS

Infestations of the intestinal tract with *Giardia lamblia* (Fig 431 p 1892) may produce manifestations of enterocolitis

Intestinal giardiasis is best managed in the manner of amebiasis using aureomycin diodoquin and/or carbarsone separately or in combination as elsewhere outlined in detail (p 4183)

GLANDERS

[Farcy]

General Principles of Diagnosis and Therapy

1 Human glanders is rarely encountered except as a laboratory infection. However, the frightening possibility that a related invasion, melioidosis, may be introduced as an agency of bacterial warfare adds the element of urgency to attempts to control glanders by anti-infective therapy.

2 Because of the intense infectivity of *M. mallei*, isolate the patient with human glanders and notify health authorities (p. 68).

3 Laboratory studies and the few clinical instances of human glanders suggest that infections with *M. mallei* are amenable to treatment with sulfadiazine. Because of the potential severity of the disease, introduce intravenously an initial loading dose of 2.5 gm. each of sodium sulfamerazine and sodium sulfadiazine in 200 cc. of diluent, preferably molar lactate. Thereafter, prescribe orally daily maintenance doses of 3 to 4 gm. each of sulfadiazine and sulfamerazine with bicarbonate of soda in 4 equally divided portions.

4 Experiences with penicillin provide no encouragement in the treatment of glanders. Combined anti-infective therapy may be attempted by supplementing sulfonamide with aureomycin or chloramphenicol, particularly since the gram negativity of the pathogenic organisms suggest the possibility that these more recently introduced anti-infective agents may be more efficacious than penicillin. Prescribe doses of no less than 100 mg. per kilogram of body weight per day or 4 products every three hours except at 3 A. M. for the average adult weighing 150 lbs.

5 For desperation anti-infective therapy, consider intramuscular injections of streptomycin. Give 1 gm. thrice daily during acute phases of the disease. The mortality of glanders offers a much greater hazard to the patient than the toxicity of combined antibiotics. Successful treatment of one case of glanders with streptomycin combined with penicillin and sulfadiazine has been reported.

6 As in other infections, give prophylactic doses with antihistamine during antibiotic therapy and for at least two weeks following the last dose. Prescribe daily amounts of 200 mg. of pyribenzamine, benadryl or any other of the antihistamines (p. 4212).

GOLD

The history of chrysotherapy is historically fascinating if therapeutically infertile. The elixir vitae of alchemists, the magic metal of Paracelsus and others at one time or other was reputed to cure syphilis, leprosy, dipsomania, cancer and asthma among other afflictions. Such few favorable results as might have been observed were

likely examples of spontaneous healing in concert with potent psychotherapy!

Presently gold is used therapeutically in the treatment of non disseminated lupus erythematosus and rheumatoid arthritis. In either instance indications for its administration are based on the erroneous hypotheses that (1) each syndrome is an atypical form of tuberculosis and (2) gold is specifically bactericidal for the tubercle bacillus.

Available Products

Gold Sodium Thiomalate (Myochrysine) NNR (Merck) Ampuls of 1 cc volume containing respectively 10, 25, 50 and 100 mg equivalent to 5, 12.5, 25 and 50 mg of gold.

Gold and Sodium Thiosulfate (Sanocrysin) NF (Abbott Merck Searle) Ampuls containing 10, 25, 50, 75 and 100 mg of a 37.4% solution.

Lauron (Endo) A suspension in sesame oil of aurothioglycolanilid containing 54% gold. Marketed in treatment sets of four multiple dose vials each containing 5 cc. Vial 1 has 50 mg and the others 150 mg of lauron per cc.

Aurothioglucose (Solganol B Oleosum) (Schering) Ampuls of 1.5 cc containing 10, 25 or 50 mg of a 50% oily suspension for intramuscular injection.

Pharmacology

After administration of any available preparation to the human patient 75 to 80% of injected gold is retained indefinitely in kidneys, liver and other organs. The remainder is excreted chiefly in urine and partially in feces. Gold can be demonstrated in blood plasma for periods up to ten months after discontinuance of injection.

Gold has no demonstrable pharmacologic action. At most an increased bacteriostatic action of blood serum is demonstrable against hemolytic streptococci. Even advocates of gold therapy admit that these laboratory findings have no particular application to the therapy of the clinical syndromes for which chrysotherapy has been recommended. Archer's hypothesis (Arch Int Med 84:367, 1949) that the production of hepatic damage and/or dysfunction by the therapeutic agent accounts for remissions of arthritis appears confirmed by the clinical observation that patients in whom toxic reactions develop respond best to treatment.

Therapeutics

Presently gold therapy has been generally abandoned in tuberculosis but it is retained in the treatment of nondisseminated lupus erythematosus and rheumatoid arthritis. Since it is now known that neither syndrome is an atypical manifestation of tuberculosis, observed benefit cannot be due to alleged bactericidal action on tubercle bacilli. According to modern concept each syndrome is the result of chronic tuberculin type allergic hypersensitivity (p. 4169) in many instances.

to streptococcal antigen. Inasmuch as gold is not effectively streptococcal and to the best of present knowledge has no prophylactic or curative effect on the hypersensitivity reaction, it is difficult to account for any therapeutic efficacy except on Archer's concept of induced hepatic damage.

Despite absence of demonstrable indications for chrysotherapy particularly in rheumatoid arthritis, experienced clinicians such as Cecil state that gold therapy is considered by many to be the most satisfactory single agent in the treatment of rheumatoid arthritis. It is particularly valuable in early cases. If a patient shows no improvement after two courses of gold therapy, further administration of the agent is contraindicated.

Against the favorable opinions are several by equally seasoned practitioners such as Bauer who expects the use of gold salts to be abandoned in the not too distant future (J A M A 132:975, 1946) of Hench (loc cit) who states his belief that chrysotherapy is justified when rheumatoid arthritis has lasted more than a few months and shows evidences of being progressive, provided that the patient understands and is willing to share the risks.

Additional evidence of the confusion that exists in the field of chrysotherapy is attested by examination of reported clinical results. Thus a favorable outcome is reported by enthusiasts in approximately 35 per cent of instances, against 15 per cent by the less optimistic. Relapse rates are granted to be high by all, but estimates vary between 50 and 80 per cent. Toxic reactions are reported as low as 25 to 30 per cent in the experience of some, and as 70 to 80 per cent in the experience of others. Whichever figures are accepted, the practitioner will perhaps be impressed primarily by the incidence of fatal gold reactions admitted to occur in 2 of five hundred cases by Bruce, and in 2 of eight hundred cases by Cecil, both strong advocates of chrysotherapy.

Final judgment of chrysotherapy may be possible when a larger experience has been obtained from use of cortisone in rheumatoid arthritis. It would not be too surprising to find that the more recent innovation hammers the last nail in the coffin of chrysotherapy.

Dosage

Whatever preparation of gold is used, the initial dose must not exceed 5 to 10 mg in order to test the tolerance of the patient to the preparation. Subsequent doses may be increased by increments of 5 to 10 mg to total weekly doses of 25 to 75 mg until 700 to 2000 mg have been administered in a single course. After a rest period of six to twelve weeks, the course may be repeated. A minimum of two courses is generally accepted as essential to the effective management of rheumatoid arthritis. The Council presently recommends only intramuscular injections; it does not sanction intravenous introduction.

Toxicity

The toxicity of gold is very much like that of arsenic (p 122). Among the long and varied list of untoward manifestations are nitritoid crises

toxicoderms including exfoliative dermatitis blood dyscrasias including agranulocytosis thrombocytopenic purpura anemia skin pigmentation (chrysiasis) acute glomerulonephritis and toxic hepatitis

During gold therapy eternal vigilance must be exercised There must be repeated physical surveys urine analyses and blood counts for early detection of toxicity Patients receiving gold therapy are warned of the potential harmful effects of exposure to strong sunlight They must not be given heliotherapy because of the hazards of photo sensitization

There is general agreement that chrysotherapy is contraindicated in the chronic deformed phases of rheumatoid arthritis in nephropathies hepatic insufficiencies blood dyscrasias anemia and acute disseminated lupus erythematosus

Whereas it is generally stated that gold therapy should be undertaken only by the expert it is difficult to understand just how the latter prevents or detects untoward manifestations in any manner that exceeds the capacity of the practitioner It is generally admitted that toxic reactions do not bear a constant relationship to the doses of gold used that there is no known method of preventing toxic reactions and as previously stated fatal gold reactions occur once in 250 to 400 even in the hands of the most experienced

Antidote

Gold therapy has been made considerably safer since introduction of BAL (p 4251) On first appearance of toxic manifestations injections of antidote are indicated in order to prevent treatment deaths In agranulocytosis concurrent injections of penicillin are recommended and transfusions fortified with vitamin K merit consideration in the bleedings of thrombocytopenic purpura

Additionally prophylactic and symptomatic administration of antihistamine is justified under all circumstances Antihistamines cannot possibly interfere with whatever may be the therapeutic principle underlying chrysotherapy and conceivably they may forestall hypersensitivity manifestations

GONOCOCCAL INFECTIONS

Principles of Diagnosis and Therapy

1 Gonococcal infection usually is limited to invasion of the urethra and reproductive tracts In the female it may extend to involve pelvic peritoneum (p 217)

2 On occasions when patient resistance is low and/or organism virulence is increased bacteremia may occur with resulting bacterial endocarditis and/or metastases particularly in the joints

3 The gonococcus is sensitive to penicillin aureomycin/chloramphenicol sulfonamides and streptomycin

4 Penicillin is currently the preparation of choice for treatment of gonorrhea. Its cure rate approximates 100 per cent. Antibiotic fast organisms are rare; there is minimum hazard of drug toxicity though minor hypersensitivity reactions may be encountered. As contrasted to aureomycin and chloramphenicol, penicillin has the advantages of longer observation and greater efficacy in the prevention and cure of concurrent syphilis. However, unlike aureomycin and chloramphenicol, it possesses no treatment potential against the three other venereal infections of chancroid, granuloma inguinale and lymphopathia venereum.

5 Aureomycin and chloramphenicol, alone of available antibiotics, attack all five venereal diseases. They are preparations of choice in granuloma inguinale, lymphopathia venereum and chancroid; they possess gonococcicidal capacities though they appear not to be as efficient as penicillin. Finally, they are spirocheticidal but not to the degree that is exhibited by penicillin.

6 Except from the standpoint of economy, penicillin is the practitioner's first choice in the prevention and treatment of gonococcal infections. Aureomycin and chloramphenicol are alternates for substitution or supplementation. Because of its lesser efficacy, its production of fast strains and its greater toxic potential, sulfonamide is last choice unless treatment cost is a prime consideration.

Practical Management

Prophylaxis

1 For prevention of ophthalmia neonatorum, prefer penicillin to conjunctival instillations of silver proteinate (p. 1621). Silver salts are less efficacious and give rise to a higher percentage of treatment conjunctivitis. Strong solutions introduced through error may produce permanent scarring of cornea with persistent visual defects and even blindness.

2 For penicillin prophylaxis of ophthalmia neonatorum, inject 100,000 to 250,000 units of crystalline procaine penicillin G in aqueous suspension into the mother during labor or instill several drops of a solution of penicillin containing 2500 units to the eye into both conjunctival sacs immediately after delivery.

3 Combine maternal injection and conjunctival instillation if birth passage has been recently contaminated.

4 For mass prophylaxis of gonorrheal urethritis, use technique employed in the armed forces. Prescribe 2 gm of sulfadiazine with a teaspoonful of bicarbonate of soda before the soldier leaves camp. Repeat dose on return to camp and at reveille the next morning. This routine reduced the incidence of gonorrhea from 171 to 8 per thousand. Simultaneously, the rate of chancroidal infections fell from 52 to 6 per thousand. Sulfonamide, however, offers no protection against syphilis, granuloma inguinale or lymphopathia venereum.

5 More impressive than sulfonamide prophylaxis of gonorrhea is that afforded by oral penicillin. Ingestion of a single tablet containing

250 000 to 500 000 units of crystalline potassium penicillin G within two hours of exposure reduced the incidence of gonorrhea from 11.9 per one thousand liberties to 2 questionable cases in 2 023 liberties. This remarkable prophylactic result was accomplished without toxic manifestations without evidences of sensitization even when penicillin was taken as frequently as three times weekly and without production of penicillin fast bacterial strains. Those men who developed gonorrhea despite penicillin prophylaxis responded to active penicillin therapy as effectively as if they had not been previously exposed to antibiotic (Eagle).

6 Whereas simple ingestion of penicillin or sulfonamide tablets is suitable for mass prophylaxis in an army establishment it is not advisable in private practice. Sulfonamide offers no protection against syphilis and the relatively small amount of penicillin that is used will not prevent and may mask syphilis. Sulfonamide offers some concurrent prophylaxis against chancroid but penicillin has no effect on the other venereal diseases namely granuloma inguinale lymphopathia venereum and chancroid.

7 For individual prophylaxis against all five venereal diseases give 10 daily intramuscular injections each of 600 000 units of crystalline procaine penicillin G in oil with 2% aluminum monostearate. Simultaneously prescribe aureomycin or chloramphenicol in doses of 250 to 500 mg 4 times daily for the period of ten days. This routine cumbersome and expensive to the patient may serve also as a deterrent to frequent and promiscuous exposure.

■ Insist on weekly examinations for the first four weeks following completion of treatment and monthly examinations thereafter for six months. At each visit in addition to physical examination take blood for serologic tests for syphilis.

Immediate Care

1 Confirm clinical diagnosis especially of urethritis by demonstration of organism in direct spreads (Fig. 3 A p. 47) or cultures. In our experiences nonspecific urethritis is not too uncommon and an error in diagnosis may cause profound domestic repercussions.

2 While a single repository dose of 300 000 units of crystalline procaine penicillin G in aqueous or oily suspension usually suffices to cure gonorrheal vaginitis and urethritis in adults or children this minimum treatment dose is not sufficient for the needs of the private practitioner. In addition to the necessity for seeking a cure rate of 100 per cent the individual physician must regard each patient exposed to gonorrhea as a potential victim of syphilis and perhaps of the remaining venereal diseases. He must in consequence vigorously over treat the gonorrheal infection in order to prevent possible development of concurrent venereal infections each of which has a longer period of incubation.

3 The course of treatment recommended for individual prophylaxis against all five venereal diseases should be repeated for each person who has acquired a gonorrheal infection. More specifically give 10

daily intramuscular injections of 600 000 units of crystalline procaine penicillin G in oil with 2% aluminum monostearate. Simultaneously prescribe aureomycin or chloramphenicol in doses of 250 to 500 mg four times daily for the ten day period.

4 Concurrently with penicillin therapy and for a period of at least two weeks after the last dose give prophylactic antihistamine as daily doses of 200 mg of pyribenzamine or benadryl.

5 Avoid local therapy. Instillations and instrumentation of vagina or urethra lead only to complications.

6 In the case of penicillin sensitivity accomplish prophylaxis against all five venereal diseases by using larger doses of aureomycin or chloramphenicol to insure spirochetocidal effect. Give 500 to 1000 mg four times daily for two weeks.

7 In the rare instance where for reasons of economy it is necessary to substitute sulfonamide for treatment of gonorrhea prescribe a loading dose of 2 gm each of sulfamerazine and sulfadiazine with 1 tea spoonful of bicarbonate of soda. Thereafter maintain antibiotic levels with oral doses of 0.25 to 0.5 gm each of sulfamerazine and sulfadiazine every four hours night and day for three to five days. By contrast with penicillin sulfonamide produces only 50 to 80 per cent of cures. Toxicity develops in an appreciable number of patients so that urine and blood must be carefully watched during the course of treatment and sensitization occurs in an appreciable number of patients (p. 4541).

Continuing Care (Favorable Course)

1 At completion of therapy order patient to report at weekly intervals for at least a month and at monthly intervals until six months have elapsed since acquisition of infection. Take blood tests for serologic reactions at each visit. Order the patient to refrain from intercourse for a minimum period of one week even though there is evidence that organisms disappear within a few hours after treatment has been initiated with any of the antibiotics.

Continuing Care (Unfavorable Course)

1 Treat the neglected patient who arrives with local complications such as posterior urethritis, prostatitis, seminal vesiculitis, orchitis, epididymitis, Bartholin's salpingitis, pelvic peritonitis or arthritis in the same manner as those with recently acquired infections.

2 In gonorrheal bacteremia particularly with endocarditis the severity of the infection requires that excessively large doses be used. It is recommended that 600 000 units of procaine penicillin G in aqueous suspension be deposited twice daily for a period of at least two and preferably three weeks. Concurrently give supplementary antibiotic therapy prescribing aureomycin or chloramphenicol orally in doses approximating 50 to 100 mg per kilogram of body weight per day (3.5 to 7 gm for average adult weighing 150 pounds). If for any reason this combination of antibiotic cannot be employed substitute sulfonamide. For intravenous use give a priming dose of 2 gm each

of sodium sulfadiazine and sodium sulfamerazine in 200 cc of diluent preferably physiologic saline 5% dextrose or molar lactate Continue maintenance doses with oral administration of 0.5 gm each of sulfadiazine and sulfamerazine and a teaspoonful of bicarbonate of soda every three four or six hours depending on severity of the disease and patient response Concurrently prescribe antihistamine in daily doses of 200 mg of pyribenzamine or benadryl

3 In the rare instance of keratosis blennorrhagica (p 3257) antihistamine therapy is suggested using benadryl or pyribenzamine in doses of 200 mg daily

4 Effective antibiotic therapy has rendered obsolete gonorrheal vaccine for prophylaxis or treatment instillations into urethra or conjunctival sac of silver proteinates inorganic silver salts potassium permanganate acriflavin proflavin alum etc hyperthermia either generalized or localized estrogen for conversion of infantile vaginal epithelium and the relatively feeble gonococidal activity of streptomycin

GRANULOMA INGUINALE

Principles of Diagnosis and Therapy

1 The Donovan body (Fig 73 p 475) of granuloma inguinale formerly regarded as a protozoan has been identified as a minute gram negative encapsulated coccobacillus

2 The newly named *Donovania granulomatis* is sensitive to aureomycin chloramphenicol and streptomycin

3 Effective use of nontoxic antibiotics has rendered obsolete antimonial therapy with tartar emetic stibosan diamun etc

Practical Management

1 Prescribe 500 mg of aureomycin or chloramphenicol every six hours for ten to fifteen days Aureomycin and chloramphenicol accomplish rapid healing without toxicity or relapse The patient may be treated on an ambulatory basis since it is not required to give parenteral deposits as with streptomycin

2 Streptomycin therapy requires frequent daily injections despite which relapses are fairly frequent Recommended doses are 3 daily injections of 1 gm for ten days or 2 daily injections each of 2 gm for five days

3 Since granuloma inguinale often is associated with other venereal infections (syphilis lymphopathia venereum gonorrhea and chancroid) perform clinical and laboratory examinations for detection of these correlated disorders Make a darkfield examination of local lesion for the spirocheta of syphilis (Fig 7 p 46) urethral spreads for gonococci Frei test for lymphogranuloma venereum (Fig 957 D p 3277) and smears from chancroidal lesions for recognition of *H. ducreyi* (p 2455)

4 Even in the absence of definitive indications of associated venereal

disease give prophylactic therapy. The course of aureomycin or chloramphenicol may be relied on to prevent or cure concurrent lymphopathia venereum, gonorrhea and chancroid, and both drugs also possess spirochetocidal activity. However, the prevention of syphilis is of such importance that additionally make 10 daily intramuscular deposits of 600 000 units of crystalline procaine penicillin G in aqueous suspension or oil.

5. After healing of lesion suggest follow up visits for clinical and serologic examinations for a minimum period of six months. If healing is incomplete repeat the primary treatment course. The scarring due to local lesions of penis, vulva or rectum (Fig 958 p 3277) may require later surgical intervention.

6. Obsolete are injections of antimonials including tartar emetic, stibosan, diramin, etc.

HABITUAL ABORTION

Defining abortion as the termination of a pregnancy of a duration of 22 weeks or less, resulting in a fetus weighing 500 gm or less, Javert subdivided patients studied over a 15 year period at the New York Hospital into primary and secondary habitual abortion groups. The former were essentially primiparas who had three or more consecutive spontaneous abortions beginning with the first pregnancy; in the group of secondary habitual abortions were multiparas who sustained three consecutive spontaneous abortions after delivery of one or more immature, premature or full term infants. The two groups were made up of women who were eight years older than the average clinic patient. 25 per cent were primiparas over the age of 35.

The incidence of primary habitual abortion was 1 in 300, while the secondary type occurred in 1 to 493.

Obstetric complications (including nausea, vomiting, toxemia of pregnancy and placenta praevia) occurred more often in abortion groups than in controls. Gynecologic complications (retroversion, myoma uteri, double uterus and cervical and endometrial polyps) also were of appreciable higher incidence. In the abortion groups there were positive serologic tests for syphilis in 6 per cent, hemoglobin values below 70 per cent in 15 per cent, and lowered basal metabolic rates in excess of 50 per cent. The Rh factor showed no significant variation from expected percentages.

When treatment was carried out with bed rest, sedation and routine administration of vitamin E and progesterone, the numbers of full term pregnancies rose from 26 per cent in the controls to 64 per cent in primary abortion, but there was no appreciable change in those with secondary abortion. Because of these relatively unsatisfactory results, the therapeutic plan of procedure was changed: patients were not confined to bed, they were not given sedation, gynecologic abnormalities were corrected, the diet was supplemented with vitamins C.

and K and with necessary minerals thyroid extract was prescribed for the one with a low basal metabolic rate and coitus was restricted throughout the entire pregnancy

With this latter form of rational therapy the percentage of full term infants rose from 26 in the controls to 80 in the primary group and from 48 to 100 per cent in the secondary group Some patients in the group treated by the rational approach received vitamin E and progesterone but later omission of these alleged specifics resulted in equally satisfactory therapeutic results In consequence the investigators regard these items as no longer a part of present therapy

HERPES SIMPLEX

[Herpes Febrilis Cold Sores Eczema Herpeticum Kaposi's Varicelliform Eruption Acute Herpetic Gingival Stomatitis Aphthous Stomatitis Acute Infectious Gingival Stomatitis]

General Principles of Diagnosis and Therapy

1 Herpes simplex is ordinarily a benign virus infection of the skin (Fig 61 p 388 Fig 70 D p 436) Occasionally however it may be associated with encephalopathy

2 On this account it would appear wise to treat herpes simplex actively using chloramphenicol which is of demonstrable value in herpes zoster (see below)

3 Since there is the possibility that the neurologic complication may be a hypersensitivity phenomenon additionally order antihistamines such as 200 mg daily of pyribenzamine or benadryl

4 If encephalopathy develops resume antihistamine in massive doses (800 mg daily) try encephalitis vaccine Herpes F strain (Lederle) as in epidemic encephalitis (p 4309) and apply for cortisone to Merck and Co

HERPES ZOSTER

[Shingles]

General Principles of Diagnosis and Therapy

1 Herpes zoster is a painful and occasionally damaging virus infection (Fig 70 A p 436)

2 The virus seems to be specifically sensitive to chloramphenicol which may be given in daily doses approximating 50 mg per kilogram of body weight per day (2 products every four hours for the average

disease give prophylactic therapy. The course of aureomycin or chloramphenicol may be relied on to prevent or cure concurrent lymphopathia venereum gonorrhea and chancroid and both drugs also possess spirochetocidal activity. However the prevention of syphilis is of such importance that additionally make 10 daily intramuscular deposits of 600 000 units of crystalline procaine penicillin G in aqueous suspension or oil.

5 After healing of lesion suggest follow up visits for clinical and serologic examinations for a minimum period of six months. If healing is incomplete repeat the primary treatment course. The scarring due to local lesions of penis vulva or rectum (Fig 958 p 3277) may require later surgical intervention.

6 Obsolete are injections of antimonials including tartar emetic stibosan diramin etc.

HABITUAL ABORTION

Defining abortion as the termination of a pregnancy of a duration of 22 weeks or less resulting in a fetus weighing 500 gm or less Javert subdivided patients studied over a 15 year period at the New York Hospital into primary and secondary habitual abortion groups. The former were essentially primiparas who had three or more consecutive spontaneous abortions beginning with the first pregnancy in the group of secondary habitual abortions were multiparas who sustained three consecutive spontaneous abortions after delivery of one or more immature premature or full term infants. The two groups were made up of women who were eight years older than the average clinic patient. 25 per cent were primiparae over the age of 35.

The incidence of primary habitual abortion was 1 in 300 while the secondary type occurred in 1 to 493.

Obstetric complications (including nausea vomiting toxemia of pregnancy and placenta praevia) occurred more often in abortion groups than in controls. Gynecologic complications (retroversion myoma uteri double uteri and cervical and endometrial polyps) also were of appreciable higher incidence. In the abortion groups there were positive serologic test for syphilis in 6 per cent hemoglobin values below 70 per cent in 15 per cent and lowered basal metabolic rates in excess of 50 per cent. The Rh factor showed no significant variation from expected percentages.

When treatment was carried out with bed rest sedation and routine administration of vitamin E and progesterone the numbers of full term pregnancies rose from 26 per cent in the controls to 64 per cent in primary abortion but there was no appreciable change in those with secondary abortion. Because of these relatively unsatisfactory results the therapeutic plan of procedure was changed patients were not confined to bed they were not given sedation gynecologic abnormalities were corrected the diet was supplemented with vitamins C

2 The presence of positive histoplasmin skin tests in a large percentage of patients with pulmonary calcification and tuberculin negativity suggests that histoplasmosis may be widespread

3 Histoplasmin antigen for skin testing is not commercially available but may be procured from the United States Public Health Service or from Dr. Michael L. Furculow of the University of Kansas Hospital, Kansas City, Kansas

4 Certain shortcomings of histoplasmin skin testing are already apparent. Palmer (Public Health Report 61:475, 1946) regards the test as of questionable diagnostic value; several of his patients with proven histoplasmosis had negative skin tests; contrariwise, many positive reactors to histoplasmin had no evidences of the disease

5 In addition to errata reported by Palmer, cross agglutination occurs in those who are sensitive to actinomycin and blastomycin

6 Despite these deterrents, the histoplasmin skin test is worthy of consideration in the diagnosis of chronic pneumonitis, particularly with caseation, when tubercle bacilli cannot be incriminated

7 The diagnosis of histoplasmosis has more than academic importance. Since many of the infected are classified and treated as patients with tuberculosis, it is imperative to recognize the etiologic agent inasmuch as streptomycin therapy of histoplasmosis is completely ineffectual

8 Isolated instances of successful therapy on the contrary have been reported with sulfadiazine, promin, trivalent and pentavalent antimonials, and the new antibiotic bacillomycin

9 Giving daily doses of 4 gm. of sulfadiazine for eighty-seven days, one successful case has been observed

10 One patient was successfully treated with stilbamine glucoside. Still another apparently derived benefit from treatment with neostibosan alternating with stilbamidine

11 Hobart Peimann employed bacillomycin, an antibiotic derived from *B. subtilis* (p. 4247). Doses of 50 mg. were deposited intramuscularly every 6 hours for five to eighteen days. The injections caused pain and fever at first, but later the febrile response lessened and eventually disappeared

12 A single cure of histoplasmosis was reported following promin therapy

13 There is general agreement that the undernoted drugs are of no value in the treatment of histoplasmosis: penicillin, streptomycin, potassium arsenide, arphenamine, acetarsone, iodide, quinine, and atabrine

HODGKIN'S DISEASE

[See Blood and Blood-forming Organs, Neoplasms of]

adult weighing 150 pounds) Favorable effects have been noted also with aureomycin using only 250 to 500 mg every six hours

HEXYLRESORCINOL USP

[Caprokol Crystoids Anthelmintic]

Hexylresorcinol appears as white or yellowish crystals with faint odor and sharp taste Hexylresorcinol produces the sensation of numbness when placed on the tongue so that it is prescribed in hard pills or capsules

Available Products

Crystoids Anthelmintic (hexylresorcinol) (Sharp & Dohme) pills of 0.1 and 0.2 gm strength

Caprokol (hexylresorcinol) (Sharp & Dohme) for urinary antiseptics capsules 0.15 gm in 25% solution in olive oil

Therapeutics

Originally introduced as a urinary antiseptic under the name of caprokol hexylresorcinol now is rarely used for this purpose However it is valuable as an anthelmintic and is first choice in ascariasis trichuriasis and intestinal distomiasis it is second choice in oxyuriasis and uncinariasis

For anthelmintic action hexylresorcinol is preceded by a saline purge the night before administration of the drug In the morning on an empty stomach 1 gm is given for the average adult dose Patients are cautioned against chewing the capsules since the drug is intensely irritating and may produce a local chemical burn Two hours later the saline purge is repeated and three hours after the purge food may be resumed In resistant infection treatment is repeated after an interval of three days

In the treatment of mixed infestations hexylresorcinol is given at least a week before tetrachlorethylene (p 4569)

Toxicology

See p 1895

HISTOPLASMOSIS

General Principles of Diagnosis and Therapy

1 Introduction of histoplasmin for determination of cutaneous sensitivity to the yeast like fungus (Fig 76 F p 487) has greatly stimulated interest in this infection previously thought to be of rare occurrence

Practical Management

Prophylaxis

1 Homologous serum jaundice is more effectually prevented than treated. The practitioner must refuse blood donations from individuals who give a frank history of jaundice within the past year or of any ill defined undiagnosed illness of any duration.

2 Unless the need is great avoid use of banked blood.

3 Unless the need is great avoid use of pooled plasma unless it has been irradiated.

4 Avoid vaccines containing human serum unless they have been irradiated.

5 If it is known that a patient has received contaminated biological fluid initiate prophylactic injections of gamma globulin. Introduce 10 cc intramuscularly and repeat at intervals of seven to fourteen days if possible.

Immediate Care

1 Carry out the routine suggested for treatment of the infected patient (p. 64).

2 Give a full and mixed diet that is palatable to the patient. Fat need not be omitted or even reduced.

3 Try gamma globulin also for active treatment of patient with frank manifestations of homologous serum hepatitis. Inject 10 cc intramuscularly. Repeat daily for three or four days if possible.

4 Despite lack of evidence of benefit give a probatory course of aureomycin or chloramphenicol, the only antibiotics with potential virucidal activity. Use large doses up to 100 mg per kilogram per day (7 gm for the average adult weighing 150 pounds). After the priming dose give a similar quantity daily for at least a week or ten days unless the expense is prohibitive.

HYALURONIDASE

Hyaluronidase is a mucolytic enzyme representing the spreading factor of Durlan Reynolds.

Available Products

Haldase (Searle) ampuls of 250 viscosity units with diluent of sodium chloride sufficient to make 1 cc of isotonic solution.

Hydase Lyophilized (Wyeth) sterile solution containing 150 units.

Pharmacology and Therapeutics

Hyaluronidase depolymerizes and decreases the viscosity of intracellular cement or mucin like substances composed of hyaluronic

HOMOLOGOUS SERUM JAUNDICE

Principles of Diagnosis and Therapy

1 The organism that causes homologous serum jaundice is a hepatogenic and hepatotoxic filtrable virus. Parenteral injections of quantities as small as 0.01 to 0.001 cc. of infected blood are capable of transmitting the disease from one human to another after an incubation period of forty to one hundred twenty days.

2 Homologous serum jaundice bears no etiologic relationship to the spirochetal or leptospiral variety better known as Weil's disease. It is distinct from virus hepatitis more commonly termed infectious or catarrhal jaundice whose incubation period is fifteen to thirty-four days.

3 During World War II yellow fever vaccine made with human serum produced 29,000 infections with 62 fatalities. In a group of 200 patients who received transfusions from a blood bank 1 in 200 suffered from homologous serum jaundice. The estimated incidence when pooled plasma was employed was 1 in 86.

4 Homologous serum jaundice also may be transmitted through mass inoculations when a contaminated syringe imperfectly sterilized is used. Of a troop injected with tetanus toxoid from a common syringe 20 per cent developed homologous serum jaundice. The problem of the disease therefore is of more than academic interest to the practitioner who uses both blood transfusions and plasma infusions.

5 Liver biopsies of patients who recovered showed characteristic cellular changes suggesting toxic hepatitis (p. 1963). In fatal instances there were large areas of atrophy with regeneration. In convalescence the liver tissues of some patients disclosed evidences of biliary cirrhosis. In a few instances the combination of hepatitis, cirrhosis and carcinoma was observed.

6 Perhaps the largest numbers of those who suffer from homologous serum jaundice present only subclinical evidences of the disease. The second largest group also non-icteric complain only of malaise, anorexia, nausea, vomiting and low grade fever. Studies of liver function in this latter group however reveal distinct changes.

7 In its classical form homologous serum jaundice is characterized by icterus first noticed by appearance of bile pigment in urine. Most patients are ill for two to three weeks and then experience a prolonged period of asthenia. In certain instances the disease terminates fatally with manifestations of acute yellow atrophy (p. 1968).

8 At the height of the disease physical findings include fever, biliary staining of tissues, enlargement of liver and palpable spleen. Middle aged females run a stormier course than others and the mortality rate is considerably higher. Wounded soldiers appeared to be afflicted more seriously than their more normal comrades in arms.

selves) attribute reported benefits to spontaneous variations in blood pressure psychotherapy weight reduction and in the case of those who are institutionalized to the mechanism of escape from environment (p 3754)

8 The highly publicized rice diet of Kempner in our experience is unacceptable to patients and impractical for use in private practice

9 As to various surgical procedures for the control or relief of hypertension we find ourselves even more set in our views than when we previously stated that the operative results are not as striking as the enthusiasts would wish The fall in blood pressure is often temporary and may be followed by a return to preoperative levels Headache vertigo and palpitation are often ameliorated out of all proportion to the blood pressure effects In certain spectacular instances fundus changes including papilledema have receded but these happy eventualities are certainly in the minority (p 915)

10 The case for surgical treatment of hypertension has been well delineated by Smithwick (Am J Med 4 744) Unfortunately so far as we are personally concerned statistical studies by the consultant specialist leave much to be desired as best illustrated by an individual case record of a woman referred by us for splanchnicectomy Her blood pressure readings in our office or in the hospital varied between 130/80 and 260/140 Our reasons for suggesting surgery were our own inability to control the course of her hypertension a single attack of transitory hemiplegia a single attack of precordial distress undoubtedly due to coronary insufficiency and an attack of paroxysmal cardiac irregularity that ended in forward failure Following a complete and competent two stage splanchnicectomy the patient was hospitalized for a total of four months and incapacitated at home with professional nursing care for an additional eight months involving considerable expense and sacrifice on the part of husband and family In convalescence her husband was taught to take her blood pressure and on occasions when she suffered symptoms of orthostatic hypotension he recorded blood pressure levels in the region of 100/80 Two years postoperatively in our office we noted blood pressure levels approximating those seen preoperatively i.e. 190/130

How shall this patient be reported statistically in the literature? An opponent of operative procedure could well point out that she had blood pressure levels of 130/80 preoperatively and of 190/130 postoperatively indicating continued unfavorable progress proponents of surgery might with equal veracity note levels of 240/160 preoperatively as compared with the husband's reading of 100/80 postoperatively Multiplication of these data a hundredfold with publication of statistical charts and graph does not contribute greatly to solid evaluation of the proposed therapeutic procedure

acid This action permits interstitial spread of various soluble substances ranging from bacterial toxins to antibiotic agents

Currently hyaluronidase is used to facilitate subcutaneous injection of fluid by hypodermoclysis (p 3771) to increase topical efficacy of antibiotics such as penicillin in mucus lined cavities to influence mechanisms responsible for lesions of rheumatic fever (p 4494) and aid fertilization when introduced intravaginally

HYPERTENSION ESSENTIAL

Principles of Diagnosis and Therapy

1 Despite many ingenious therapeutic efforts certain of which have been highly publicized the treatment of essential hypertension remains essentially unchanged so far as the practitioner is concerned Main reliance still is placed on psychotherapy weight reduction sedation hypnosis alterations in the way of life rest cures gentle exercise and abstinence from tobacco (pp 911-914)

2 In the field of specific drug therapy there is now fairly uniform opinion that nitrates nitrites aminophyllin aconite mistletoe watermelon seeds onion extract insulin free pancreatic extracts and other tissue derivatives iodides estrogen and androgen accomplish little of benefit to the patient (p 912)

3 There is now general agreement with our previously stated opinion that use of sulfocyanates is excessively toxic in proportion to their accomplishment (p 912) In a comparison of potassium thiocyanate with a placebo patient complaints increased in approximately 50 per cent and decreased in approximately 33 per cent justifying the conclusion that the drug was unreliable and hazardous

4 There also appears to be unanimity of opinion that the xanthines particularly aminophyllin accomplish little and add considerably to the patient's expense

5 Of older preparations only veratrum viride commends present attention Newly available commercial products assayed by the Crawford method provide fairly sustained hypotension through a direct vasodilator mechanism Vertavis (Irwin Neisler) marketed in tablets each containing 10 Crawford units may be given in initial doses of 3 to 6 daily and increased to 6 to 10 tablets if no untoward effects become manifest (nausea vomiting)

6 Among newly introduced products which have proven disappointing despite pharmacologic potential are sympatholytic preparations such as tetraethylammonium (Etamon) salts and prazosin

7 In dietotherapy efforts have been made to demonstrate the value of regimens which practice restrictions of salt sodium chloride fat and cholesterol In each instance enthusiastic proponents claim specific results whereas the more critical (in which ranks we find our

passive immunity can be produced. It is used also to supplement immunizations particularly when immediate protection is required to bridge the gap between injection of antigen (in *artificial active immunity*) and actual production of significant antibody titers.

Chemoprophylaxis is practiced with *amebicides* in amebic dysentery with *penicillin* in anthrax diphtheria erysipelas gas gangrene gonorrhea meningococcal infections pneumococcal infections scarlet fever taphylococcal and streptococcal infections and syphilis with *sulfonamides* in chancroid cholera colon bacillus infections gonorrhea granuloma inguinale meningococcal infections and pneumococcal infections with *aureomycin* and/or *chloramphenicol* in cholera colon bacillus infections granuloma inguinale lymphopathia venereum brucellosis whooping cough plague Rocky Mountain spotted fever the salmonellosis the shigellosis typhus fever tsutsugamushi fever and tularemia with *malaricides* in malaria and *trypanosomicides* in African sleeping sickness.

Immunization in Infancy and Childhood

For accomplishment of active immunization practitioners encourage routine inoculation in infancy and childhood.

The Special Committee on Child Welfare of the Medical Society of the County of New York has reviewed immunization procedures for the prevention of contagious diseases. It recommends the following as a generally satisfactory means of immunization in private practice.

Smallpox

1. Vaccinate between third and ninth months provided that the cord has healed and the infant exhibits no manifestations of hypersensitivity such as idiosyncrasy to milk or eggs or atopic dermatitis (infantile eczema).

2. Repeat vaccination pre kindergarten or school pre high school and at any time when there is threat of exposure.

3. Prefer the multiple pressure method.

4. To these we would add prophylactic use of antihistamine to combat the rare but grave post vaccinal myeloencephalopathies (p 4307). Give 50 to 200 mg depending on age of pyribenzamine or benadryl daily for three weeks following vaccination.

Diphtheria

1. For single diphtheria immunization start injections between the sixth and ninth month of age. Give two doses of 1 cc each at monthly intervals of alum precipitated toxoid (p 4302) or three doses at monthly intervals of plain toxoid (p 4206).

2. Inject booster doses of 0.25 cc of toxoid on admission to kindergarten or school pre high school and to recall immunity on exposure.

IMMUNIZATION AND CHEMOPROPHYLAXIS

Immunity is conferred by an attack of an infectious disease (*natural active immunity*) by transfer of antibody from mother to infant (*natural passive immunity*) by stimulation of antibody production through injection of specific antigen (*artificial active immunity*) and by introduction of preformed antibody (*artificial passive immunity*) (p 73-87). Additionally modern science has added the great boon of chemoprophylaxis using specific antibiotics (p 4201).

Natural Active Immunity Natural active immunity is usually permanent. It is conferred as the result of a clinical or subclinical bout of the specific infectious disease. Natural active immunity follows attacks of chickenpox, cholera, measles, mumps, pertussis, plague, poliomyelitis, Rocky Mountain spotted fever and related rickettsioses, scarlet fever, smallpox, typhoid fever, typhus fever, tsutsugamushi fever, tularemia and yellow fever.

Patients who give a definitive history of attacks of any of these specific diseases do not require artificial protection. Those who have had subclinical attacks in which the diagnosis has not been confirmed clinically or serologically warrant protection on exposure.

Natural Passive Immunity Natural passive immunity is conferred by transfer of preformed antibody from mother to infant through placental circulation. Natural passive immunity is transitory and lasts at best for a period of six months. It is conferred in diphtheria, typhoid fever and poliomyelitis.

Beyond the age of six months natural passive immunity for diphtheria dissipates. Thereafter the child requires diphtheria immunization for development of powerful artificial active immunity.

Artificial Active Immunity Artificial active immunity is accomplished by introduction of specific antigen (p 4204) to stimulate manufacture of sufficient specific antibody for purpose of protection.

Antigens for induction of artificial active immunity are available in cholera, diphtheria, virus encephalopathies, virus influenza, melitensis, pertussis, plague, rabies, Rocky Mountain spotted fever, scarlet fever, smallpox, tetanus, typhoid fever, typhus fever and yellow fever.

Routine injection of antigen for production of artificial active immunity is mandatory in diphtheria, pertussis, smallpox, tetanus and typhoid fever. On exposure stimulation of artificial active immunity is highly advisable in cholera, virus encephalopathies, virus influenza, plague, rabies, Rocky Mountain spotted fever, tuberculosis, tsutsugamushi fever and yellow fever.

Artificial Passive Immunity Indications for accomplishment of artificial passive immunity are rapidly shrinking in view of the efficacy of antibiotics. Nevertheless there is still an important place in therapeutics for protective antiserums in H influenzae B, anthrax, tetanus, diphtheria, gas gangrene, botulism and possibly plague.

Chemoprophylaxis Chemoprophylaxis is of greater importance in those diseases in which neither artificial active immunity nor artificial

passive immunity can be produced. It is used also to supplement immunizations particularly when immediate protection is required to bridge the gap between injection of antigen (in *artificial active immunity*) and actual production of significant antibody titers.

Chemoprophylaxis is practiced with *amebicides* in amebic dysentery with *penicillin* in anthrax diphtheria erysipelas gas gangrene gonorrhea meningococcal infections pneumococcal infections scarlet fever staphylococcal and streptococcal infections and syphilis with *sulfonamides* in chancroid cholera colon bacillus infections gonorrhea granuloma inguinale meningococcal infections and pneumococcal infections with *aureomycin* and/or *chloramphenicol* in cholera colon bacillus infections granuloma inguinale lymphopathia venereum brucellosis whooping cough plague Rocky Mountain spotted fever the salmonellosis the shigellosis typhus fever tsutsugamushi fever and tularemia with *malaricides* in malaria and *trypanosomicides* in African sleeping sickness.

Immunization in Infancy and Childhood

For accomplishment of active immunization practitioners encourage routine inoculation in infancy and childhood.

The Special Committee on Child Welfare of the Medical Society of the County of New York has reviewed immunization procedures for the prevention of contagious diseases. It recommends the following as a generally satisfactory means of immunization in private practice.

Smallpox

1. Vaccinate between third and ninth months provided that the cord has healed and the infant exhibits no manifestations of hypersensitivity such as idiosyncrasy to milk or eggs or atopic dermatitis (infantile eczema).

2. Repeat vaccination pre kindergarten or school pre high school and at any time when there is threat of exposure.

3. Prefer the multiple pressure method.

4. To these we would add prophylactic use of antihistamine to combat the rare but grave post vaccinal myeloencephalopathies (p. 4307). Give 50 to 200 mg depending on age of pyribenzamine or benadryl daily for three weeks following vaccination.

Diphtheria

1. For single diphtheria immunization start injections between the sixth and ninth month of age. Give two doses of 1 cc each at monthly intervals of alum precipitated toxoid (p. 4302) or three doses at monthly intervals of plain toxoid (p. 4206).

2. Inject booster doses of 0.25 cc of toxoid on admission to kindergarten or school pre high school and to recall immunity on exposure.

Tetanus

1 Administer tetanus toxoid in the manner of diphtheria toxoid

2 For booster doses however use doses of 0.5 cc. In the event of accident or trauma prefer fluid toxoid since the response to alum precipitated toxoid is not sufficiently prompt for acute need

Pertussis

1 Start immunization at third or fourth month. If saline suspension of vaccine is used give 20 billion organisms for the initial deposit follow at monthly intervals by two injections each of 30 billion bacilli to total 80 billion hemophili. If alum precipitated vaccine is used give three monthly injections each of 15 billion organisms to total 45 billion hemophili.

2 Give booster doses of 20 billion organisms in saline suspension or of 10 billion of alum precipitated vaccine at the third year and again to recall immunity on exposure

Triple Immunization

1 Triple immunization against diphtheria tetanus and pertussis may be given with a single product. Reactions are scarcely more severe and immunity levels are not impaired. Starting at the age of four months inject combined diphtheria toxoid alum precipitated tetanus toxoid alum precipitated and pertussis vaccine alum precipitated in doses of 1 cc. at monthly intervals.

2 Whereas some members of the Committee favor triple immunization the method has not yet been officially endorsed by the American Academy of Pediatrics or the Committee on Immunization Procedures of the American Public Health Association.

3 Booster injections of 1 cc. are suggested at the first birthday. For purposes of recall of immunity on exposure to any one of the three infections use the single indicated product i.e. diphtheria toxoid tetanus toxoid or pertussis vaccine.

Measles

1 Inject 2 cc. of gamma globulin following direct exposure to measles. Passive immunity lasts only three weeks. Active immunity of a permanent nature follows modified measles and many instances of so called 'aborted' disease.

Author's Method

Our personal preferences for immunization are indicated in the accompanying Time Table.

TIME TABLE FOR ACTIVE IMMUNIZATION IN INFANCY AND CHILDHOOD

| Age | Prophylactic |
|----------------------------------|--|
| 3 to 6 months | Smallpox vaccine (p 427) with antihistamine |
| 6 to 12 months | 1 cc Diphtheria Toxoid, Tetanus Toxoid Alum Precipitated Whooping Cough Vaccine Combined |
| 2 weeks later | 1 cc Whooping Cough Vaccine (p 283) |
| 2 weeks later | Repeat Diphtheria Toxoid, Tetanus Toxoid, Pertussis Vaccine as above |
| 18 to 24 months | Schick test (p 304) Booster of Diphtheria Toxoid, if positive |
| 5 to 6 years (pre-school) | Repeat Diphtheria Toxoid Tetanus Toxoid Pertussis Vaccine as above |
| 10 to 10 years (school and camp) | Typhoid vaccine (p 236) Repeat Smallpox Vaccine and Tetanus booster (p 296) |
| 13 to 14 years (high school) | Repeat Smallpox Vaccine Typhoid Vaccine and Tetanus booster |

Immunization in Adult Life

Adults who have not received active immunization in infancy and childhood are given the original schedule previously listed. Thereafter they as well as those who have had childhood immunizations are entitled to booster doses of typhoid tetanus and diphtheria and to a repetition of smallpox inoculations after three to five year intervals.

Immunization on Exposure

On exposure in addition to routine immunizations protection should be afforded adults and children threatened with typhus plague cholera yellow fever malaria amebiasis tularemia Rocky Mountain spotted fever rabies influenza virus and venereal diseases.

ACTIVE IMMUNIZATION FOR ADULT

Age 18

If immunized in childhood repeat smallpox vaccine (p 427) typhoid vaccine (p 236) and tetanus booster (p 296)

If not immunized, give

- 1 Typhoid vaccine
- 2 Smallpox vaccine
- 3 Diphtheria toxoid tetanus toxoid, pertussis vaccine combined

Every 5 years

Repeat

- 1 Smallpox vaccine
- 2 Typhoid booster
- 3 Tetanus booster

On exposure travel to infected countries or special indications

Repeat above and in addition consider

- 1 Typhus vaccine (p 375)
- 2 Plague vaccine (p 322)
- 3 Cholera vaccine (p 250)
- 4 Yellow fever vaccine (p 480)
- 5 Tularemia vaccine (p 326)
- 6 Rocky Mountain spotted fever vaccine (p 380)
- 7 Rabies vaccine (p 433)
- 8 Influenza virus AB vaccine (p 397)

Travelers

An immunization schedule for travelers has been prepared by the Department of National Health and Welfare of Canada. These recommendations are applicable equally to citizens of the United States of America.

IMMUNIZATION SCHEDULE FOR TRAVELERS*

| Country or Region of Destination | Small pox | Diphtheria | Typhoid | Typhus | Cholera | Yellow Fever | Plague |
|----------------------------------|-----------|------------|---------|--------|---------|--------------|--------|
| Argentina | x | x | x | x | — | x | — |
| Australia | x | x | x | x | — | — | — |
| Belgium | x | x | x | x | — | — | — |
| Brazil | x | x | x | x | — | x | — |
| British West Indies | x | x | x | — | — | x | — |
| British West Africa | x | x | x | x | — | x | — |
| Chile | x | x | x | — | — | x | — |
| Colombia | x | x | x | x | — | x | — |
| China | x | x | x | x | x | — | x |
| Cuba | x | x | x | x | — | x | — |
| Egypt | x | x | x | x | x | — | x |
| England | x | x | — | — | — | — | — |
| Federated Malay States | x | x | x | x | x | — | x |
| Formosa | x | x | x | x | x | — | — |
| France | x | x | x | x | — | — | — |
| Greece | x | x | x | x | — | — | — |
| Guatemala | x | x | x | x | — | x | — |
| India | x | x | x | x | x | — | x |
| Ireland | x | x | — | — | — | — | — |
| Italy | x | x | x | x | — | — | — |
| Indo-China | x | x | x | x | — | — | — |
| Japan | x | x | x | x | x | — | — |
| Korea | x | x | x | x | x | — | — |
| Mexico | x | x | x | x | — | — | — |
| Netherlands | x | x | x | x | — | — | — |
| Netherlands East Indies | x | x | x | x | x | — | x |
| Newfoundland | x | x | — | — | — | — | — |
| New Zealand | x | x | x | — | — | — | — |
| Norway | x | x | x | x | — | — | — |
| Peru | x | x | x | x | — | x | — |
| Portugal | x | x | x | x | — | — | — |
| Russia | x | x | x | x | — | — | — |
| Siam | x | x | x | x | x | — | x |
| Straits Settlement | x | x | x | x | x | — | x |
| South Africa | x | x | x | x | — | — | — |
| Sweden | x | x | x | x | — | — | — |

Only such positive personnel who give a negative control test should be immunized.

E. L. Davey M.D. Department of National Health and Welfare Ottawa, Canada
Immunization procedures recommended for foreign travel Canad. M. A. J. 58:77-79
1948

Combined Immunity and Chemoprophylaxis The ingenious practitioner combines the principles of immunization and chemoprophylaxis in order to protect his patient against a wide variety of microbial invasions as presented in the accompanying chart (p. 4367).

PRACTICAL PREVENTIVE MEDICINE IN INFECTIOUS DISEASES

| Disease | Natural Active Immunity | Natural Passive Immunity | Artificial Active Immunity | Artificial Passive Immunity | Chemoprophylaxis |
|---------------------------------|-------------------------------|--------------------------------|--|-----------------------------------|--|
| Amebiasis | 0 | 0 | 0 | 0 | Amebicides |
| Anthrax | 0 | 0 | 0 | Feeble | Penicillin |
| Chancroid | 0 | 0 | 0 | 0 | Sulfonamide aureomycin, chloramphenicol |
| Chickenpox | + | 0 | 0 | 0 | 0 |
| Cholera | + | 0 | + | 0 | Sulfonamide aureomycin or chloramphenicol |
| Coli infection | 0 | 0 | 0 | 0 | Sulfonamide aureomycin or chloramphenicol |
| Diphtheria | 0 | 6 mos. | + | + | Penicillin |
| Encephalopathies | 0 | 0 | Try Jap B Equine St. Louis Herpes F Vaccines | 0 | 0 |
| Erysipelas | 0 | 0 | 0 | 0 | Penicillin, sulfonamide |
| Gas Gangrene | 0 | 0 | 0 | + | Penicillin |
| Gonorrhea | 0 | 0 | 0 | 0 | Penicillin, sulfonamide |
| Granuloma Inguinale | 0 | 0 | 0 | 0 | Aureomycin/chloram phenicol |
| Influenza (Virus) | 0 | 0 | + | 0 | 0 |
| Lymphopathia Venereum | 0 | 0 | 0 | 0 | Aureomycin/chloram phenicol |
| Malaria | 0 | 0 | 0 | 0 | Malaricides (p 4397) |
| Measles | + | 0 | 0 | + | 0 |
| Melitensis infection | 0 | 0 | Feeble | 0 | Aureomycin/chloram phenicol |
| Meningococcus infection | 0 | 0 | 0 | + | Penicillin, sulfonamide |
| Mumps | + | 0 | 0 | 0 | 0 |
| Pertussis | + | 0 | + | 0 | Aureomycin/chloram phenicol |
| Plague | + | 0 | + | 0 | Sulfonamide aureomycin/ chloramphenicol |
| Pneumococcus infection | 0 | 0 | 0 | Feeble | Penicillin, sulfonamide |
| Polio-myelitis | 0 | 6 mos. | 0 | 0 | 0 |
| Rabies | 0 | 0 | + | + | Try aureomycin/chloram phenicol |
| Rocky Mountain spotted fever | 0 | + | 1 yr | 0 | Aureomycin/chloram phenicol |
| Salmonellosis | 0 | 0 | Feeble | 0 | Aureomycin/chloram phenicol |
| Scarlet fever | + | 0 | Feeble | Feeble | Penicillin |
| Shig illness | 0 | 0 | Feeble | 0 | Aureomycin/chloram phenicol |
| Smallpox | + | 0 | + | 0 | 0 |
| Staphylococcus infection | 0 | 0 | Feeble | 0 | Penicillin, sulfonamide |
| Streptococcus infection | 0 | 0 | 0 | Feeble | Penicillin, sulfonamide |
| Syphilis | 0 | 0 | 0 | 0 | Penicillin |
| Tetanus | 0 | 0 | + | + | Penicillin |
| Trypanosomiasis | 0 | 0 | 0 | 0 | Trypanosomicides (p 4594) |
| Tsutsugamushi fever | + | 0 | Feeble | 0 | Aureomycin/chloram phenicol |
| Tuberculosis | 0 | 0 | BCG | 0 | 0 |

PRACTICAL PREVENTIVE MEDICINE IN INFECTIOUS DISEASES (Continued)

| Disease | Natural Active Immunity | Natural Passive Immunity | Artificial Active Immunity | Artificial Passive Immunity | Chemoprophylaxis |
|---------------|-------------------------|--------------------------|----------------------------|-----------------------------|----------------------------|
| Tularemia | + | 0 | Feeble | 0 | Aureomycin/chloramphenicol |
| Typhoid fever | + | 6 mos | + | 0 | Chloramphenicol |
| Typhus fever | + | 0 | + | 0 | Aureomycin/chloramphenicol |
| Yellow fever | + | 0 | + | 0 | 0 |

INCLUSION CONJUNCTIVITIS

[Inclusion Blepharitis Swimming Pool Conjunctivitis Paratrachoma]

General Principles of Diagnosis and Therapy

1 Inclusion conjunctivitis is a viral infection that is particularly damaging to newborn. In the adult it is apt to occur in those who use swimming pools where the virus may be transmitted from genitals to eye. It is possible that the etiologic organism is related to that which causes lymphopathia venereum (p 4391)

2 Whereas moderate success has followed sulfonamide therapy (p 1623) local and systemic administrations of aureomycin possess greater potential at lesser hazard

3 Specifically anoint lids with aureomycin hydrochloride ointment (3%) Instill into each conjunctival sac at two hour intervals 2 to 4 drops of aureomycin borate ophthalmic solution made by dissolving contents of a vial containing 25 mg of antibiotic in 5 cc of diluent supplied by manufacturer. This solution is stable at refrigerator temperatures for two days

4 Supplement local and topical therapy by oral administration of 50 mg of aureomycin per kilogram per day (2 capsules every six hours for the average adult weighing 150 pounds)

INFECTIOUS LEUKOPENIA

Regard infectious leukopenia as a variant of infectious mononucleosis and manage the illness in similar manner (p 4369)

INFECTIOUS LYMPHOCYTOSIS

Regard infectious lymphocytosis as a variant of infectious mononucleosis and manage the illness in like manner (p 4369)

INFECTIOUS MONONUCLEOSIS

[Glandular Fever]

Principles of Diagnosis and Therapy

1 Infectious mononucleosis is a viremia (p 466) whose diagnosis is established definitively by the characteristic blood picture (Fig 71 p 469) and by development of heterophile agglutination (Paul Bunnell test)

2 While the course of infectious mononucleosis is invariably benign the chronicity of symptoms may be exhausting to the patient and disturbing to the physician. On a few occasions changes have been noted in electrocardiograms. In a group of 206 patients Isaacs reported that fifty three had persistent symptoms for from three months to four years or longer.

3 The development of a false positive Wassermann reaction (p 337) in the course of infectious mononucleosis is another disturbing feature of the syndrome. Confusion in diagnosis is increased if the misleading serologic reaction is accompanied by clinical manifestations suggestive of secondary syphilis such as lymphadenitis and a scarlatiniform eruption.

4 Recent studies reveal that hepatitis almost identical with that seen in viral hepatitis is present in infectious mononucleosis. In nineteen consecutive patients suffering from infectious mononucleosis without jaundice varying degrees of hepatic dysfunction were revealed by serial cephalin cholesterol flocculation and sulfobromophthalein excretion tests. The duration of hepatic involvement ranged from two weeks to five months and there was usually enlargement and tenderness of the liver during this period.

5 Successful but inconsistent results have been obtained by use of aureomycin and chloramphenicol in the treatment of infectious mononucleosis. It is suggested that patients be given 60 to 100 mg per kilogram of body weight per day (4 products every three to six hours for the average adult weighing 150 pounds).

6 The use of anti-infective agents may be supplemented with injections of gamma globulin as in viral hepatitis particularly in the early phases of the infection. Intramuscular injections of 4 to 8 cc are strongly recommended for children and 10 to 20 cc for the adult.

7 In the chronic infectious phases of mononucleosis Isaacs found that residual symptoms responded to treatment with adrenal cortical extract.

INFECTIOUS POLYNEURITIS

[Guillain Barre Syndrome Landry's Paralysis

Encephalomyeloradiculitis Infectious Neuritis Acute Polyneuritis with Facial Diplegia]

1 Infectious polyneuritis is a viremia characterized by neurologic signs referable to peripheral spinal and cranial nerves. The illness

usually is most prevalent in the cold months of the year and may last for several weeks or several years. The mortality rate approximates 20 per cent.

2 Infectious polyneuritis is accompanied by a mild polymorphonuclear leukocytosis. Cerebrospinal fluid findings include increased pressure, normal cells and greatly increased amounts of protein which may reach 800 mg per 100 cc (albuminocytologic dissociation).

3 In view of the prolonged course of the disease and its high mortality rate, treatment with the only effective antibiotic, aureomycin, and chloramphenicol merits trial in large doses (100 mg per kilogram per day).

INFLUENZA (HEMOPHILUS) INFECTION

Principles of Diagnosis and Therapy

1 *Hemophilus influenzae* is a frequent etiologic agent in upper respiratory infections: nasopharyngitis, otitis, mastoiditis, otogenic and rhinogenic meningitis, laryngotracheobronchitis, acute pneumonitis, subacute bacterial endocarditis and conjunctivitis.

2 Most *H. influenzae* infections are self-limited, but some, such as laryngotracheobronchitis, subacute bacterial endocarditis and meningitis, carried high pre-treatment mortality rates.

3 Except in subacute bacterial endocarditis and meningitis, the bacteriologic diagnosis of *Hemophilus influenzae* invasion is rarely made. From blood and infected cerebrospinal fluid, however, the organism may be identified as a minute pleomorphic gram-negative coccobacillus (p. 285).

4 Invasions due to *Hemophilus influenzae* require differentiation from those due to influenza virus (p. 4372). For the viral infection, prophylactic vaccination is of proven efficacy, but the organism is antibiotic-resistant.

By contrast, in *Hemophilus influenzae* infections, influenza bacterial vaccine (Kirk, Lilly, Parke, Davis, Pitman, Moore, Sharp & Dohme, Sherman, Upjohn) is not recommended, but active therapy is successfully accomplished by several antibiotics (aureomycin, chloramphenicol, streptomycin and soluble sulfonamides).

5 In addition to antibiotics, *Hemophilus influenzae* also responds to specific heterologous antibacterial serum. A refined and concentrated anti-*Hemophilus influenzae* type B rabbit serum is commercially available (Scribb). Vials containing 25 mg of precipitable antibody nitrogen are marketed with diluted serum for skin and ophthalmic testing. After desensitization, if necessary, the contents of 1 to 4 vials (diluted to 25 or 100 cc with physiologic saline solution) may be introduced by continuous intravenous drip. Serum therapy may be repeated after twenty-four and/or thirty-six hours, if required.

Practical Management

Immediate Care

1 In the management of invasions of lesser gravity symptomatic therapy usually suffice (p 67) More serious inflammatory processes require intensive and combined anti infective therapy preferably under institutional circumstances Particularly is this precaution required in laryngo tracheobronchitis subacute bacterial endocarditis and meningitis

2 On admission of the severely infected patient obtain blood spinal fluid or sputum for culture typing of the isolated organism and testing against available antibiotics and immune serums

3 Summon consultant otolaryngologist to survey accessory nasal sinuses middle ears mastoid cells and adjacent blood sinuses for evidences of feeding focal inflammation If indicated consider tracheotomy (p 3958) drainage of accessory nasal sinuses exenteration of mastoid cells or ligation of infected venous sinuses

4 As first choice in the antibiotic treatment of *Hemophilus influenzae* infections prescribe aureomycin or chloramphenicol preferably the former Depending on severity of infection and patient resistance give priming dose of 50 to 100 mg per kilogram of body weight (3 to 7 gm for average adult weighing 150 pounds) Suggest that 2 products be swallowed every few minutes with fruit juice tea milk ice cream or soup to allay gastric irritability

5 If stomach is intolerant of aureomycin substitute chloramphenicol in larger dosage

6 If neither antibiotic is tolerated orally resort to a rectal infusion improvised by dissolving contents of capsules in physiologic saline Use double to quadruple doses Warm and slowly introduce with a male catheter meanwhile holding buttocks firmly together

7 As an alternative to rectal administration in those with gastric intolerance inject aureomycin hydrochloride intravenously Give at least 100 mg dissolved in diluent provided by manufacturer Repeat at six to eight hour intervals until antibiotic is tolerated orally or rectally

8 Reserve streptomycin for those who cannot take aureomycin or chloramphenicol Make a priming intramuscular deposit of 1 to 2 gm

9 Depending on patient reaction start daily maintenance doses of streptomycin within twelve to twenty four hours Give an amount equal to priming dose in 2 divided portions at approximately 12 hour intervals

Continuing Care (Favorable Course)

1 Maintain antibiotic levels with aureomycin or chloramphenicol or with streptomycin as indicated above

2 If streptomycin is substituted start antihistamine prescribing daily 200 mg of pyribenzamine or benadryl in 4 divided doses Continue for at least two weeks after introduction of the last dose of antibiotic

Continuing Care (Unfavorable Course)

1 With evidences of meningitis respiratory obstruction overwhelming toxemia or bacteremia supplement aureomycin/chloramphenicol or streptomycin with soluble sulfonamide. Introduce intravenously 75 mg per kilogram of body weight (16 cc of 5% solution for each 25 lbs in infancy). Use equal parts of sodium sulfadiazine and sodium sulfamerazine (p 4546)

2 Depending on patient response start maintenance doses of sulfonamide eight twelve or twenty four hours after introduction of priming amount. Give a dose equal to priming dose divided in 2 or 3 portions at 8 or 12 hour intervals

3 If antihistamine has not yet been started prescribe doses as above concurrently with sulfonamide

4 In graver infections (obstructive laryngotracheobronchitis subacute bacterial endocarditis or meningitis) establish an intravenous drip. Alternately deliver aureomycin hydrochloride soluble sulfonamide and antihistamine (5 cc of 1% benadryl)

5 Reserve antihemophilus influenza type B hyperimmune rabbit serum for desperation use. After test for sensitivity and desensitization when necessary add serum therapy to the combination of aureomycin/chloramphenicol or streptomycin with soluble sulfonamide and antihistamine

6 Intrathecal therapy in Hemophilus influenzae meningitis no longer appears warranted (Hoyne JAMA 136 597 1949). The spinal puncture is physically and psychologically a trial to the already depleted patient. Intrathecal introduction of foreign substance produces an aseptic meningitis with pleocytosis and subsequent manifestations of increased intraspinal pressure and treatment results in those who receive antibiotic and antiserum parenterally are as satisfactory as in those who have had additional intrathecal introduction of therapeutic agents (p 4409)

INFLUENZA VIRUS INFECTIONS*Principles of Diagnosis and Therapy*

1 Differentiate influenza virus infections from those due to Hemophilus influenzae (p 4371)

2 Influenza virus infections resistant to currently available antibiotics may be successfully prevented by induction of a transitory artificial active immunity with influenza virus vaccine Types A and B (Lederle Lilly National Drug Parke Davis Pitman Moore Sharp & Dohme Squibb)

3 Influenza virus vaccines are harvested from allantoic fluid of infected chick embryos. The product is then formalin killed after which it is refined and concentrated

4 Because of unpreventable contamination of vaccine with egg

protein withhold immunization of those who give a history of hyper sensitivity to chicken or egg proteins (p 4329)

5 Make skin test of prospective recipients of vaccine with 1:10 dilution of the commercial preparation about to be used. Reject those who give an immediate positive response.

Practical Management

1 Advocate biannual immunization with influenza virus vaccine provided that the patient has neither a history nor skin test suggesting hypersensitivity to chicken or egg protein. In the presence of a serious epidemic (p 396) cautiously introduce vaccine by multiple intracutaneous injections.

2 Although single 1 cc doses of vaccine are recommended (Council on Influenza of the United States Army JAMA 124:982, 1944) it is our custom to give 2 doses each of 0.5 cc at 24 or 48 hour intervals. Immunity is established somewhere between the eighth and eleventh days. It persists at an effective level for a minimum period of four months. In the presence of an outbreak of epidemic influenza virus infection booster doses of 0.5 cc are advised injected sub- or intracutaneously.

3 Since widespread availability of newer anti-infective agents there has been fortunately no serious epidemic of virus influenza (p 396). In the event that epidemic virus influenza again attacks, probatory anti-infective therapy with aureomycin or chloramphenicol is suggested as in graver H. influenzae invasions.

4 Under experimental investigation and not commercially available are newer antibiotics including LL-47 and pectin, the latter a derivative of apples.

INSECTICIDES AND RATICIDES

The importance of insecticides and raticides is emphasized by the following listing of microbic infections transmitted to man by lice, fleas, flies, mosquitoes, mites and ticks (Cf Table 2, p 42).

Bacterial Infections Typhoid fever, salmonellosis, shigellosis, bubonic plague, tularemia, anthrax.

Treponematoses Relapsing fever, yaws.

Rickettsias Louse-borne typhus fever, tsutsugamushi diseases, Rocky Mountain spotted fever.

Viremia Yellow fever, dengue, verruca peruana, sandfly fever, St. Louis encephalitis, equine encephalomyelitis.

Protozoal Infections Malaria, leishmaniasis, onchocercosis.

Helminthiasis Filariasis, trypanosomiasis, loiasis.

Additionally, the rat and its fleas disseminate rat bite fever, plague and endemic typhus fever.

While the problem of pest control is the province of the public health officer, the practitioner must be aware of progress made in the control

SYMPTOMS AND TREATMENT OF POISONINGS DUE TO INSECTICIDES AND RODENTICIDES

| INSECTICIDES Product | Portal of Entry | | | Symptoms | Estimated Lethal Dose for 60-kg Man | Treatment |
|---|-----------------|------|------|---|---|---|
| | Mouth | Lung | Skin | | | |
| Lethanes Thamite (Aliphatic Thiocyanates) | X | | | Deep depression cyanosis dyspnea and tonic convulsions Rapid circulatory collapse and death | 24-120 cc of 50% kerosene solution | Gastric lavage and symptomatic |
| DDT (Dichloro diphenyl trichloroethane) | X | X | X | Tremors progressing to tonic and clonic convulsions Ventricular fibrillation | Unknown Possibly 30 gm | Gastric lavage Anticonvulsant drugs (phenobarbital) Epinephrine contraindicated |
| Methoxychlor (Dimethoxydiphenyl trichloroethane) | X | | | Usually limited to depression Tremor may be noted in chronic poisoning | 400 to 450 gm | Removal of insecticide from stomach and intestinal tract O/cathartics should be avoided |
| DDE (DDD) Dichlorodiphenyl dichloroethane | Y | | X | Lethargy | 240 to 300 gm | Removal of insecticide from stomach and intestinal tract O/cathartics should be avoided |
| Chlordane (Octachloromethane tetrahydrodione) | X | X | X | Irritability of central nervous system Convulsions followed by depression This cycle may be repeated several times | 6 to 60 gm | Removal of insecticide from stomach and intestinal tract Symptomatic |
| Benzene Hexachloride (Mixtures of alpha beta gamma and delta isomers) | X | X | X | Hyperexcitability and convulsions caused by alpha and gamma isomers Depressant effect of delta isomer tends to counteract the action of the alpha and gamma isomers | About 30 gm of technical benzene hexachloride contains 15% gamma isomer | Follow general treatment plan given for DDT |

| | | | | | | |
|--|---|---|---|---|---|--|
| Toxaphene (Chlorinated camphene) | X | X | X | Similar to those elicited by toxic doses of camphor Epileptiform convulsions | 2 to 7 gm | Evacuation of stomach and intestinal tract Anticonvulsant drugs (bromides phenobarbital) |
| Organic Phosphates (Tetraethylpyrophosphate and Parathion) | X | X | X | Muscarine effect (lacrimation salivation sweating nausea vomiting diarrhea bronchiolar constriction miosis and disturbance of vision) Nicotine effect (flushing of skin throbbing in head heart block muscle tremor) | 12 to 20 mg | Evacuation of stomach and intestinal tract Atropine 0.5 to 1.0 mg Peripheral muscular depressants (magnesium sulfate intravenously) Calcium gluconate should be available in case of overdosage of magnesium sulfate |
| RODENTICIDES | | | | | | |
| 1080 (Sodium Fluoroacetate) | X | | | Epileptiform convulsions Pulsus alternans followed by premature systoles and ventricular fibrillation | 300 mg | Immediate emesis and gastric lavage Oral magnesium sulfate Anticonvulsant drugs (barbiturate) Complete rest If ventricular fibrillation occurs intravenous injection of 5 cc of a 1% solution of procaine hydrochloride may restore organized heartbeat |
| Antu (A/pha naphthylthiourea) | X | | | Sharp drop in body temperature Increased blood sugar levels Pleural effusion, torpor dyspnea and death | Possibly 300 gm (based on data calculated for <i>Mus musculus</i>) | Prompt evacuation of stomach followed by treatment for secondary shock Oxygen under positive pressure Massive intraperitoneal doses of cytochrome up to 2000 mg/kg |

of vectors in infectious disease. Through use of new insecticides it is possible today (1949) to break within a few days or weeks epidemics of human disease such as louse borne typhus, malaria, dengue and fly fever and a number of other important diseases. (Knippling)

Insecticides

An admittedly bewildering array of new insecticides has appeared on the market. The practitioner is required to have some familiarity with these products to prevent dissemination of insect borne diseases when called to treat his individual patient afflicted with a vector transmitted illness.

ROSTER OF INSECTICIDES

OF VEGETABLE ORIGIN

Derris (Rotenone)

A mild irritant to skin and conjunctiva. Used for spraying crops. Not for application to humans or their premises.

Pyrethrum Flowers (Insect Powder)

Insecticide especially for bed bugs and roaches. Used in spray bomb (Flit) and with DDT in U.S. Army Aerosol Pyrethrum Bomb. Mammalian toxicity low.

Nicotine

Too toxic for use on humans or their premises.

SYNTHETICS

Lethane (Aliphatic thiocyanates)

Too toxic for use on humans or their premises.

CHLORINATED HYDROCARBONS

DDT

See text.

Methoxychlor ($C_4H_7ClO_2$)

Less acute toxicity for man and most insects than DDT but possesses danger of chronic toxic nephropathy.

TDE ($C_{10}H_{10}Cl_4$) Rhothane

Danger of chronic toxicity for liver and adrenals.

Chlordane

Several times as toxic to houseflies and roaches as DDT. Also useful against ants, chiggers, fleas, mosquitoes, boll weevil and plum and squash bugs. Oral use as toxic as DDT but action is less lasting. Used primarily for large scale pest control, particularly grasshoppers.

Benzene Hexachloride (666 Gammaxene)

Has twice oral toxicity of DDT, hepatotoxic but effective on livestock against lice, ticks, boll weevils, grasshopper and wireworms.

Toxaphene (Chlorinated Camphene)

Has four times oral toxicity of DDT. Used for cotton pests. Not for use on humans or their premises.

ORGANIC PHOSPHATES

Hexaethyl Tetraphosphate and Tetraethyl Pyrophosphate

Thirty five times oral toxicity of DDT. Used externally for roaches, flies, insects and aphids.

Parathion (E 605)

Seventy times oral toxicity of DDT. Has garlic like odor. Used only for DDT resistant insects.

Insect Repellents

The United States Army has chosen the undernoted formula as the currently best available insect repellent

| | |
|---------------------------------------|------|
| Dimethyl Phthalate | 36 0 |
| Putger # 612 (2-ethyl 1 3 hexanediol) | 12 0 |
| Indalone | 12 0 |

Directions Apply to the skin by shaking a few drops in one hand Then rub hands together and smear over exposed parts Avoid mouth and eyes Use also to impregnate clothing Protective action lasts for one to eight hours against mosquitoes biting flies chiggers ticks fleas gnats sandflies midges and mites

Practical Applications Practical applications of knowledge of insect repellents and insecticides are summarized in the following chart

THERAPEUTICS OF INSECT REPELLENTS INSECTICIDES AND RATICIDES

| Indication | Suggested Preparation |
|---|---|
| Mosquito repellent | U S Army formula |
| Mosquito larvicide | DDT larvicide powder |
| Mosquitocide | DDT spray or bomb |
| Mite repellent | U S Army insect repellent |
| Miticide | DDT spray or bomb |
| Chiggers | DDT powder (1 to 5%) or 10% louse powder |
| Lice | DDT 1 to 5% powder or 10% louse powder |
| Scabies | See Scabicides (p 4514) |
| Ticks | DDT powder (10%) or 5% solution in kerosene |
| Fleas | 10% powder or 5% solution in kerosene |
| Houseflies biting flies roaches gnats bed bugs ants | 10% powder bomb or 5% solution in kerosene |
| Rats | ANTU |

Accidental ingestion of insecticides and absorption of the more toxic through the unbroken skin may produce serious and even fatal consequences (p 4375)

IODIDE

The history of the use of iodide as an anti infective agent is a series of mystifying disappointments Successively tried as bactericide spirocheticide and fungicide iodide therapy is bewilderingly inconsistent On rare occasions it is specifically successful most often it is unsuccessful and occasionally it appears harmful As yet these opposed and contradictory results defy explanation

Available Products

Inorganic Salts

Sodium Iodide U S P prefer potassium iodide

Potassium Iodide U S P use saturated solution

Solution of Potassium Iodide NF Preparation of choice each cc contains 1 gm of KI

Syrup of Hydriodic Acid U S P contains 1.4% hydriodic acid prefer potassium iodide

Syrup of Ferrous Iodide U S P prefer potassium iodide

Organic Iodides

Calcium Iodobehenate (Sajodin) contains 23.5% iodide no advantage over inexpensive inorganic salt

Iodostarine contains 47.5% iodide no advantage over inexpensive inorganic salt

Oridine contains 24% iodide no advantage over inexpensive inorganic salt

Iodide Oils (for roentgenography)

Pharmacology

Iodide is rapidly absorbed and diffuses mostly to extracellular fluids. It concentrates in the blood in a proportion approximating 3 to 20 micrograms per 100 cc. Most iodide is found in skin, hair and muscles though some is stored in the thyroid gland as thyroxine. Excretion occurs mostly through urine with lesser quantities in saliva and bronchial mucus.

Therapeutics

The only demonstrably effective use of iodide as an anti-infective agent is resolution of the rarely observed gumma of tertiary syphilis (Fig. 49 G and H, p. 338). To place any confidence in iodide other than as an antisiphilitic is a grievous error since it is not comparable to penicillin or the arsenicals (p. 4554).

Iodides are extensively employed in the treatment of fungus infection such as actinomycosis, blastomycosis, sporotrichosis, torulosis, aspergillosis, coccidioidomycosis, moniliasis, geotrichosis, etc. Whatever is accomplished in these diseases, certain it is that iodides are not specifically fungicidal. Most authorities agree that, given before vaccine desensitization, iodide therapy of the fungus diseases may produce exacerbation of symptoms. Given after desensitization, those with most experience in the treatment of fungus infections place considerable confidence in iodide therapy (p. 4255).

Previously regarded as contraindicated in tuberculosis due to its tendency to produce ulceration and dissemination of lesions, iodide therapy is being reinvestigated as an adjunct to antibiotic treatment with the streptomycins.

Antitherapeutic Devices

The symptoms of iodism are elsewhere described (p. 612). Even to superficial examination, iodism bears a considerable similarity to syndromes of acute histamine type hypersensitivity (p. 4167). Additionally, it has been noted that iodide is capable of producing chronic tuberculin type hypersensitivity manifestations (p. 4169).

The pathogenesis of iodide in hypersensitivity reactions together with clinical observations that iodide therapy may cause exacerbation of symptoms in fungus infections tuberculosis and leprosy suggest that iodide has some as yet not clearly demonstrable role in the production of allergic manifestations. When this presently mysterious participation has been clarified it may be possible to evaluate iodide therapy with more accuracy and administer the drug to the benefit and not the detriment of the patient. Until that time iodide therapy must be undertaken tentatively at all times with due regard to the possibility of producing exacerbation of clinical manifestations.

ISONORIN SULFATE N N R

Isonorin sulfate is chemically related to isuprel. Its formula is 1 (3,4-dihydroxyphenyl) 2-(isopropylamino)ethanol 1-sulfate.

Available Preparations

Tablets Isonorin (C. D. Smith) 10 mg

Solution Isonorin (C. D. Smith) (1:200) for oral inhalation

Pharmacology and Therapeutics

Known in Europe under the trade names of aludrine, isonorin, is identical in its activities to isuprel (q.v.).

ISOPENTAQUINE OXALATE

Isopentaquine oxalate (8-[4-isopropylamino-1-methylbutylamino]-6-methoxyquinoline) SN 13,274 N N R is a malaricide under investigation particularly for combined use with quinine in the treatment of relapsing vivax infections (p. 4398).

Available Products

Tablets 10 mg. For investigational use only.

Therapeutics

In the treatment of relapsing vivax give 10 mg. thrice daily for two weeks together with 0.6 gm. quinine sulfate.

In these small doses isopentaquine has no toxicity. The combination with quinine is almost 100 per cent effective, excelling even chloroquine and chloroquine.

ISUPREL N N R

Isuprel is a newly prepared adrenergic with many times the activity of epinephrine in combating bronchospasm. It exhibits considerably less pressor action so that it is ideally suited for the asthmatic who suffers from bronchospasm and seeks relief without pharmacologically induced hypertension (p 4270)

Available Preparations

Isuprel Tablets (Winthrop) 10 or 15 mg for sublingual administration
Isuprel Solution (Winthrop) (1:200) for oral inhalation

Pharmacology and Therapeutics

Isuprel; chemically is 1-(3,4-dihydroxyphenyl)-2-isopropylamino ethanol. It is closely related to *isonorin*. Taken sublingually inhaled intranasally in 1:200 solution sprayed by a simple hand bulb nebulizer or preferably with oxygen aerosol absorption is rapid and relief is afforded in one to three minutes. In the more severe attack isuprel must be repeated after three or four hours. The drug should not be administered simultaneously with epinephrine since both substances are pharmacologically related.

Side effects of clinically effective doses of isuprel are negligible.

JAUNDICE

See Homologous Serum Jaundice Spirochetal Jaundice and
 Virus Hepatitis

KLEBSIELLOSIS

(*Klebsiella Pneumoniae* (Friedlander Bacillus) Infections *Bacillus Mucosus Capsulatus* Infections)

Principles of Diagnosis and Therapy

1 *Friedlander's bacillus mucosus capsulatus* is a gram negative organism which produces characteristically large mucoid capsules (p 328)

2 *Klebsiellas* may produce localized infections of upper respiratory passages eye or ear they may invade the blood stream and give rise to bacteremia they may cause a virulent and formerly treatment resistant pneumonitis (pp 2176-2192) and they may travel from respiratory passages to meninges and inaugurate otogenic or rhinogenic meningitis (pp 2128-2148)

3 The diagnosis is suggested clinically by the tenacious character

of exudate or sputum. Bacteriologically the organism is identified through its morphologic appearance and cultural characteristics.

4 *Klebsiellas* are insensitive to sulfonamide and penicillin but extremely sensitive to streptomycin, aureomycin and chloramphenicol.

5 Closely allied to *Kl. pneumoniae* are *Kl. ozaenae* and *Kl. rhinoscleromatis*. In the presence of infection with either sub-variety therapy is conducted along the same lines as for infections with *Kl. pneumoniae*.

6 Obsolete is *klebsiellosis* vaccine commercially available but never of proven clinical value.

Practical Management

Immediate Care

1 Because of high infectivity of *klebsiellosis* institute measures for treatment of the infected patient (p. 67).

2 Prescribe priming dose of aureomycin or chloramphenicol approximating 50 mg per kilogram of body weight (35 gm for average adult weighing 150 lbs). To prevent gastric irritation give 1 or 2 capsules every few minutes with a large quantity of milk, ice cream, fruit juice, soup, tea or cream cheese.

3 Start maintenance doses of antibiotic within six to eight hours after full amount of priming dose has been ingested. Give same quantity for daily dose as was prescribed for priming dose but divide into four equal portions taken at approximately six hour intervals.

Continuing Care (Unfavorable Course)

1 If stomach is intolerant of either aureomycin or chloramphenicol substitute opposite number. Give chloramphenicol in slightly larger doses than were suggested for aureomycin.

2 If stomach is tolerant increase daily dose to 100 mg per kg (7 gm for 150 pound adult).

3 If neither antibiotic is tolerated deposit streptomycin intramuscularly in initial priming dose of 1 gm. Follow by 0.5 gm every six or eight hours as indicated.

4 Since *klebsiellas* are often secondary invaders combined antibiotic therapy is recommended in virulent and resistant infection. More effectively to cover the bacterial spectrum supplement aureomycin, chloramphenicol or streptomycin with penicillin using intramuscular deposits of 600,000 units of procaine penicillin G in aqueous suspension for priming and daily maintenance doses.

5 Concurrently with combined antibiotic order daily oral doses of antihistamine using 200 mg of pyribenzamine or benadryl for prophylaxis of hypersensitivity reactions (p. 4212). Continue for two weeks after last dose of antibiotic.

6 Keep sulfonamides in reserve for particularly resistant infection. Continue penicillin and either aureomycin, chloramphenicol or streptomycin and add soluble sulfonamide. Give a priming dose of 2 gm each of sulfadiazine and sulfamerazine with 4 gm of sodium bicar-

bonate Continue with maintenance doses of 0.5 gm each every four or six hours as required. If stomach is intolerant give intravenous priming dose of 2.5 gm each of sodium sulfadiazine and sodium sulfamerazine in 200 cc of diluent preferably molar lactate.

7 Summon consultant otolaryngologist particularly in cases of meningitis. Ascertain whether surgical intervention may not be additionally required. Particularly with bacteremia look for evidences of mastoiditis and/or sinus thrombosis. Prepare for mastoidectomy and/or vein ligation if indicated.

KOCH WEEKS CONJUNCTIVITIS

[Pink Eye]

General Principles of Diagnosis and Therapy

1 The organism that produces pink eye (p. 1621) is a slim gram negative rod that is sensitive to sulfonamide and aureomycin.

2 In view of the lesser threat of the latter it is suggested that treatment be conducted locally and systemically with the newer antibiotic.

3 Anoint lids and conjunctivae with 3% aureomycin hydrochloride ointment. Instill into each eye 2 to 4 drops at two hour intervals of aureomycin ophthalmic solution prepared by adding 5 cc of diluent supplied by the manufacturer to the vial containing 25 mg of antibiotic. Keep this solution in the refrigerator where it remains stable for two days.

4 If symptoms are severe or refractory to local therapy supplement with oral doses of aureomycin hydrochloride giving 50 mg per kilo gram of body weight per day (2 capsules of 250 mg each every six hours for the average adult weighing 150 pounds).

LABORATORY PROCEDURES SIMPLIFIED

The commercial introduction of several ingenious laboratory aids has simplified the detection in body fluids of albumin, sugar, acetone and occult blood. The tests are economical and sufficiently accurate for all clinical purposes; they may be performed by the practitioner in his office laboratory or at the bedside; they can be taught the patient for home testing.

Albutest

(Ames Company, Elkhart, Ind.)

The tablet method for the qualitative detection of albumin in urine is performed as follows:

- 1 Dissolve 1 Albutest reagent tablet in 4 cc (1 teaspoonful) of water.
- 2 Place 1 cc of urine in a test tube.

- 3 Slant the test tube at a 45° angle
- 4 Down side of tube slowly deliver 1 cc of reagent
- 5 In presence of albuminuria (p 3672) a white cloudy ring forms at juncture of fluids The quantity of albumin may be approximated by comparison with standard

Clinitest for Urine Sugar

(Ames Company Elkhart Ind)

Glycosuria (p 3673) may be qualitatively detected and quantitatively approximated through use of a pocket sized kit with test tablets (containing anhydrous copper sulfate anhydrous sodium hydroxide citric acid and sodium bicarbonate) test tube dropper and color scale The reaction also may be used on cerebrospinal fluid (p 3734)

- 1 Place 5 drops of urine in a test tube
- 2 Rinse dropper and add 10 drops of water
- 3 Add 1 test tablet to test tube Observe spontaneous generation of heat with boiling of solution
- 4 After fifteen seconds match color of fluid in test tube against scale provided with kit In absence of glycosuria fluid remains clear and blue With sugar in urine fluid becomes densely turbid and under goes color changes from green through dirty brown to copper A flocculent turbidity without color change may be ignored

Galatest Dry Reagent for Detection of Urine Sugar

(Denver Chemical Manufacturing Company New York City)

The Galatest powder (Denco) is a dry reagent composed of a bismuth salt sodium hydroxide and sodium silicate In the presence of a reducing sugar a grey or black color is produced by formation of metallic bismuth in a finely divided partially colloidal state The reaction takes place in approximately thirty seconds It is not modified by large amounts of other urinary products either normal or abnormal except for lactose in excess of 2%

- 1 Shake bottle containing powder before use
- 2 Deposit small mound of powder on a piece of plain white paper
- 3 Using a dropper deposit one small drop of urine on powder Do not flood powder with urine The test also may be performed with cerebrospinal fluid (p 3734)
- 4 In the absence of urinary sugar the white powder takes on color of urine In presence of sugar powder turns grey (0.2%) to black (1% or more) Any color other than grey or black is unimportant in the test as it is most likely due to the presence of malic acid urea compounds or medicine which the patient may have taken
- 5 To approximate percentage of sugar in particular urine match color of powder against test chart In presence of more than 1% urine may be diluted with equal parts of water and re tested until quantity is more accurately approximated
- 6 The simplicity of the test recommends it for home use by patients particularly diabetics under insulin therapy (p 1246)

7 After use vial is tightly capped as hygroscopic powder must be protected from moisture at all times. Each vial provides sufficient material for about 200 tests.

Acetone Galatest

(Denver Chemical Manufacturing Company New York City)

Acetone test (Denco) is a dry reagent composed of sodium carbonate ammonium sulphate and nitroprusside in anhydrous form. In presence of acetone (p 3680) powder turns a shade of purple intensity depending on quantity of acetone. Reaction takes place in about sixty seconds and is performed in the manner of the dry test for glycosuria.

1 Deposit a small mound of powder on a piece of paper.

2 Add 2 or 3 drops of urine to saturate the powder. Be sure that entire mass of the powder is completely moistened.

3 In presence of acetone powder turns some shade of purple and may be compared against color chart. In absence of acetone powder takes on a greyish yellow color. The simplicity of the test recommends it particularly for home testing by diabetics (p 1246).

4 The following substances present in urine in pathological conditions did not give false positive reactions nor did the deep color of the urine due to their presence prevent the reading of a positive test.

Albumen

Bile salts

Blood

Creatinine

Urobilin

Urobilinogen

Acriflavin

Methylene blue

Silver nitrate

Crystals

Sulfamids

Hematest

(Ames Company Elkhart Ind.)

A dry test for occult blood in urine or stool (p 3728) is performed with reagent tablets containing calcium acetate, tartaric acid, strontium peroxide and orthotolidin.

1 Make a suspension of stool in water. Urine is tested as voided.

2 Add a drop of specimen to the small square of filter paper that is packaged with tablets.

3 Place hematest tablet in center of moist area, allow two drops of water to trickle from top of tablet to paper.

4 In presence of occult blood a blue color develops on the filter paper around hematest tablet within two minutes. Disregard discoloration of tablet itself and of filter paper directly under tablet. If no blood is present paper will not change color although the tablet may turn a faint blue. The test is responsive to dilutions of 1/20,000.

5 After opening bottle cotton is not replaced. The bottle is stored at room temperature away from direct sunlight and must be tightly stoppered.

LAMBLIASIS

[See Giardiasis]

LEISHMANIASIS

[Kala Azar Daukalin Dum Dum Fever Tropical Splenomegaly
Ponos Aleppo Boil Oriental Sore]

Principles of Diagnosis and Therapy

1 Systemic leishmaniasis is most effectually treated with pentavalent antimonials (p 534 and Fig 89 p 535)

2 Mucocutaneous or American leishmaniasis and cutaneous or tropical leishmaniasis are best treated with trivalent antimony (Fig 971 p 3317 and Fig 973 p 3319)

3 Each of the manifestations of leishmaniasis is the result of invasion of tissues by *Leishmania donovani* (Fig 972 p 3318) transmitted from man to man or from an animal reservoir such as the sandfly to man

Practical Management*Immediate Care*

1 For treatment of systemic leishmaniasis ethylstibamine (neostibosan) is generally regarded as the preparation of choice Ethylstibamine is commercially available in ampuls containing 0.3 gm The ampul is packaged with an ampul of diluent containing 6 cc so that a freshly prepared 5% solution is easily improvised An initial probatory intravenous injection of 0.1 gm is given (2 cc of 5% solution) On alternate days the injection is repeated using 0.2 gm (4 cc of 5% solution) on the third day 0.25 gm (5 cc of 5% solution) on the fifth day and the maximum dose of 0.3 gm (6 cc of 5% solution) on the seventh day If there are no serious reactions the maximum dose is continued until the patient has received a total of 17 injections

2 As an alternative to ethylstibamine stibamine glucoside (neostam) is suggested This preparation is commercially available in vials containing 0.1, 0.5, 1 and 5 gm doses Neostam is given intravenously in an initial probatory dose of 50 mg By increments of 50 mg the dose is increased to a total maximum dose of 250 mg Of this amount 10 or 11 injections are given for a complete course to total 2.6 to 2.8 gm

3 In the Egyptian Sudan where the disease is resistant the United States Navy recommends injections of stibamidine isethionate A freshly prepared solution is made in 10 cc of sterile distilled water which must not be heated The initial dose is 1 mg per kilogram of body weight The maximum dose is 150 mg given every other day for fifteen injections

4 For treatment of American mucocutaneous or tropical cutaneous varieties trivalent antimony is advised Most authorities prefer stibophen

(neostimosan fuadin) marketed in 5 cc ampuls containing 6.3% of the drug. On the first day 1.5 cc is injected intramuscularly. The second injection on the next day is increased to 3.5 cc. Thereafter on the third fifth seventh ninth eleventh thirteenth and fifteenth days 5 cc are deposited to total 40 cc of 6.3% solution. The course may be repeated after one or two weeks. Thereafter stibophen is given once every seven to fourteen days for several weeks to prevent relapse.

5. Successful therapy has also been reported using diramin (p. 4224) a preparation commercially available in ampuls containing 2 cc of an aqueous solution (1 cc equals 85 mg metallic antimony). The usual dose is 2 cc every second day for five to fifteen intravenous injections though larger doses up to 4 cc are well tolerated.

LEPROSY

[Hansen's Disease]

Principles of Diagnosis and Therapy

1. Once the diagnosis of leprosy has been established (p. 273 Figs. 36-39 pp. 274-276) refer the patient to the National Leprosarium at the United States Marine Hospital, Carville, Louisiana.

2. At Carville specific therapy is conducted with promin, diasone or promizole.

3. With promin an initial intravenous dose of 1 gm is given. If patient tolerates this amount dose is increased by daily increments of 0.5 to 1 gm until a total of 5 gm is injected. When maximum dose has been achieved injections are given daily for two weeks followed by treatment holidays of one week provided that no serious toxic manifestations develop (p. 4552).

4. Diasone (not commercially released as yet) has the advantage over promin in that it can be given orally. According to the method used in Hawaii 0.3 gm are ordered in capsule form three days a week. If the dose is well tolerated each dose is increased by increments of 0.3 gm until the patient takes maximum amount of 1.2 gm. Thereafter the maximum dose of 1.2 gm is given three times weekly. Later if course is favorable 0.3 gm are given on alternate days. Each dose again is increased by increments of 0.3 gm until patient receives a weekly total of 2.7 gm.

In Mexico larger initial doses up to 1 gm daily for seven days are employed. Thereafter 1.2 gm are given daily for seven days and 1.6 gm daily thereafter until the condition is relieved or toxic symptoms develop. Diasone therapy is interrupted for two weeks every two months.

5. Promizole therapy is conducted in the manner of diasone using tablets given orally. An initial dose of promizole is 0.5 gm. The dose is increased daily by increments of 0.5 gm until the patient takes 6 to 8 gm daily unless toxic symptoms intervene sooner. Promizole appears less toxic than diasone.

6 While on sulfone therapy constant observation of urine and blood is necessary. Injections of liver extract thrice weekly may prevent development of anemia. Transfusions are required if hemoglobin falls below 8 gm per 100 cc and erythrocytes below two million. On development of agranulocytosis deposits of penicillin are recommended.

7 To the list of useless or obsolete preparations (p 277) now may be added streptomycin (214 388) penicillin diphtheria toxoid quina crine and chaulmoogra oil (p 277).

8 Once regarded as a specific in leprosy chaulmoogra oil has been superseded by sulfones.

9 Investigationally sulphetrone has some promise and sterogy! ■ proprietary is under trial in Brazil (p 4533).

LEUKEMIA ACUTE

[See Blood and Blood forming Organs Neoplasms of]

LEUKEMIA CHRONIC LYMPHATIC

[See Blood and Blood forming Organs Neoplasms of]

LEUKEMIA CHRONIC MYELOID

[See Blood and Blood forming Organs Neoplasms of]

LISTERIA MONOCYTOGENES INFECTIONS

Principles of Diagnosis and Therapy

1 *Listeria monocytogenes* is a gram positive rod shaped non sporeforming bacillus. It occurs in smooth and rough forms.

2 In man and sheep *Listeria* may produce bacteremia and meningo encephalitis. There are no distinctive clinical features. The diagnosis rests wholly on isolation of the organism from blood or cerebrospinal fluid.

3 Clinically and experimentally *Listeria monocytogenes* is susceptible to sulfonamides but insensitive to penicillin.

4 Because of the rarity of human *Listeria* infections and the severity of clinical manifestations massive dose sulfonamide therapy is suggested. Use a priming intravenous injection of 2.5 gm each of sodium sulfadiazine and sodium sulfamerazine diluted to at least 200 cc with saline or preferably molar lactate.

- 5 Maintain sulfonamide levels by daily oral doses of 2 to 3 gm each of sulfadiazine and sulfamerazine with 4 gm of sodium bicarbonate
- 6 Concurrently with sulfonamide prescribe daily doses of 200 mg of antihistamine using pyribenzamine or benadryl for possible prevention of hypersensitivity phenomena

LITMOCIDIN

Litmocidin is an antibiotic derived from *Proactinomyces cyaneus*. Litmocidin strongly inhibits growth of staphylococci, streptococci, tubercle bacilli, and *V. comma*. Litmocidin under experimental investigation is not commercially available.

LL 47

A mold product derived from *Aspergillus*. Under experimental investigation for activity against influenza virus. Not commercially available.

LOAIASIS

[See *Filariasis*]

LUPUS ERYTHEMATOSUS, ACUTE DISSEMINATED

General Principles of Diagnosis and Therapy

- 1 Regard acute disseminated lupus erythematosus (Fig 997 p 3400) as a chronic tuberculin type allergic hypersensitivity (p 4169)
- 2 Among the striking clinical features (p 3399) are predominant occurrence in females between the ages of 12 and 30 years, presence of thermal and photosensitivities, absence of tuberculous lesions, suspicion of streptococci as sensitizing bacterial allergens, and failure of all forms of specific pharmacotherapy including autohemotherapy, blood transfusions, and administrations of quinine, liver, testosterone, propionate, nicotinamide, bismuth, gold, and sulfonamide.
- 3 Of recommended therapeutic preparations, gold and sulfonamides particularly appear dangerous because of their own tendencies to produce hypersensitivity phenomena (p 4179).
- 4 Prefer to use large doses of antihistamine parenterally and orally. For injection, deposit 5 cc of 1% benadryl (50 mg) twice or thrice daily if the patient is confined to bed. Supplement this with oral doses of at least 800 mg daily of pyribenzamine or benadryl for as long as antihistamines are tolerated.

5 Until preparations are commercially available make application for cortisone to Merck and Co Rahway N J or to Dr Chester S Keefer Chairman National Academy Allocation Committee 2101 Constitution Ave Washington D C for ACTH to Dr John R Mote Armour and Co Chicago Illinois Meantime make clinical trial of artisone (Wyeth) and percorten (Ciba) purchasable in the open market In the use of the latter inject 1 cc intramuscularly (equivalent to 5 mg desoxycorticosterone) followed within five minutes by intravenous introduction of 10 cc of 10% ascorbic acid (1 gm) Unless prompt and dramatic improvement is noted with artisone and per corten—ascorbic acid abandon therapy after three or four consecutive daily injections

6 Protect the patient from potential allergens including sunlight pollens drugs serums cosmetics and foods to which sensitization occurs frequently (milk and dairy products eggs wheat strawberries etc)

7 Carry out the details for treatment of bacterial allergy (p 4249)

8 Consider supplementation with vitamin D₂ Use oral capsules of drisdol N N P (calciferol) in doses of 50 000 units thrice daily for several months Watch out for toxic manifestations due to hypercalcemia (anorexia nausea vomiting abdominal pain fatigue thirst polyuria and the development of renal crystalluria or calculosis)

■ With gastric intolerance substitute calciferol parenterally (Kremers Urban) Inject intramuscularly 0.1 to 0.3 cc daily of a solution containing 500 000 U S P units of irradiated ergosterol to the cc

LUPUS ERYTHEMATOSUS CHRONIC

Principles of Diagnosis and Therapy

1 Regard chronic lupus erythematosus (Figs 995 and 996 p 3395) as a manifestation of chronic tuberculin type allergic hypersensitivity (p 4169)

2 Conduct therapy as in the acute variety but exercise explicit precautions to prevent further exposure to allergens particularly if patient is ambulatory

3 In addition to recommended therapeutic measures for acute lupus syndrome try oral administration of 2 tablets of bisnitate three times daily for a month

4 Protect the patient while ambulatory with sunburn protective to filter out ultraviolet rays (p 3140)

5 In desperation consider reference of the patient to the specialist provided with facilities for injection of nitrogen mustard

LUPUS VULGARIS

Principles of Diagnosis and Therapy

1 In contrast to lupus erythematosus regard lupus vulgaris (p 3262) as a true tuberculosis of the skin (Fig 951B p 3263)

2 Start with systemic therapy using capsules of drisdol NNR (calciferol vitamin D₂) in doses of 50 000 units thrice daily for several months

3 Lesions may show some exacerbation after the first two or three weeks of treatment Later they should soften and flatten

4 Watch out for manifestations of hypercalcemia due to vitamin D₂ These include anorexia nausea vomiting abdominal pain fatigue thirst polyuria and the development of renal crystalluria and concretions Should untoward manifestations develop interrupt vitamin therapy temporarily but resume later

5 Encouraging but not universally successful results of vitamin D₂ therapy have been reported Patients are placed on an unrestricted diet except for limitation of milk to one pint daily and a complete ban on cheese and mineral oil

6 For patients resistant to vitamin treatment alone drisdol may be combined with injections of streptomycin Despite previous use of larger doses the practitioner is warned not to exceed 0.5 to 1 gm daily for forty two days This latter precaution is dictated by efforts to prevent development of neurovestibular toxicity and bacterial fastness (p 4610)

7 In view of the tendency of tuberculosis to produce sensitizing phenomena give antihistamine with vitamin therapy whether or not streptomycin is used in conjunction Daily oral doses of 200 mg of pyribenzamine or benadryl are suggested

8 Very few patients fail to respond to the routine above described Should failures be encountered however they are to be referred to the specialist for consideration of local treatments which include efforts to destroy the lesion without scarification by use of Finsen or Kromeyer lamps electrodesiccation electrocoagulation application of 5 to 10% pyrogalllic acid (p 3125) roentgen irradiation or freezing with carbon dioxide snow (p 3785)

9 In view of the equivocal results of gold as a bactericide in tuberculosis of its toxicity and tendency to produce hypersensitivity reactions chrysotherapy is definitely not recommended despite many enthusiastic reports to the contrary

LYMPHOCYTIC CHORIOMENINGITIS

General Principles of Diagnosis and Therapy

1 Lymphocytic choriomeningitis is another non suppurative encephalomyelomeningitis (p 442) of virus origin

2 The infection is capable also of producing manifestations resembling grippe and pneumonitis (p 449)

3 Among lower animals the virus has been isolated from mice which may be the human vectors

4 The diagnosis is established in convalescence by demonstration of complement fixing and virus neutralizing bodies

5 There is no specific prophylactic or curative therapy available at present On the basis of encouraging results in virus pneumonitis ornithosis and lymphogranuloma venereum administration of aureomycin or chloramphenicol merits trial

6 Since the virus has been isolated from patient's urine the latter should be sterilized before disposal into the sewage system Traps should be set for mice

LYMPHOPATHIA VENEREUM

[Lymphogranuloma Venereum Climatic Bubo Tropical Bubo
Esthimene Poradenitis Nicolas Favre's Disease]

General Principles of Diagnosis and Therapy

1 Lymphopathia venereum is not as is generally thought a localized infection of genitals rectum and sigmoid It is a systemic invasion with an organism closely allied to that which produces ornithosis psittacosis and virus pneumonitis

2 In all likelihood the microbe of lymphopathia venereum is midway between rickettsias and viruses

3 The diagnosis of lymphopathia venereum rests on the clinical appearance of the lesion (Fig 72 p 470) and the Frei test (Fig 72D p 470)

4 The Frei test is performed intradermally with Frei antigen (Lederle) or Lygranum ST (Squibb) Inject 0.05 to 0.1 cc intracutaneously into the skin of the flexor surface of the right forearm Introduce a like amount of control in the left forearm Observe reactions at 48 and 72 hours

5 The patient with lymphopathia venereum must be suspected of having acquired other venereal infections at the same time Particularly follow up observations include serologic tests for syphilis Additionally during the first examination examine the chest for evidences of atypical pneumonitis

6 The etiologic agent of lymphopathia venereum is sensitive to sulfonamide streptomycin aureomycin and chloramphenicol Sulfonamide is least expensive but aureomycin and chloramphenicol are most potent and least hazardous

7 If sulfonamides are used in treatment give sulfadiazine in a daily dose of 2 to 4 gm for ten to fourteen days After a rest period of a week repeat treatment if necessary

7 Streptomycin therapy requires intramuscular injections of 0.5 gm of dihydrochloride four times daily for fourteen days. This treatment is impractical particularly for ambulatory patients.

8 The most efficient and safest method of therapy utilizes aureomycin or chloramphenicol preferably the former if the patient tolerates the antibiotic well. Give a priming dose of 50 mg per kilogram of body weight (3.5 gm for average adult weighing 150 lbs.) To avoid gastric irritation 2 capsules each of 250 mg are swallowed every ten or fifteen minutes accompanied by a small amount of milk, cream, cheese, ice cream or fruit juice. After four hours start maintenance doses using the same amount as for the priming dose but divided in 4 equal parts given at six hour intervals. If aureomycin is not tolerated substitute chloramphenicol.

9 After the venereal lesion has healed perform proctoscopic examination to ascertain whether rectal damage has been done. The latter may later result in the formation of strictures requiring dilatation or surgical repair.

10 Obsolete are antimony, gold and hormonal treatments.

MADUROMYCOSIS

[Mycetoma]

Principles of Diagnosis and Therapy

1. Treat maduromycosis (Fig. 969 p. 3314) as actinomycosis (p. 4141).
2. Encouraging results have been obtained with the use of large doses of iodides.
3. Excision, drainage and even amputation may have to be considered in management of local lesions.

MALARIA

[Paludism, Ague, Blackwater Fever, Jungle Fever]

Principles of Diagnosis and Therapy

From the time of its introduction as a decoction of cinchona bark until the exigencies of war compelled belligerents to devise synthetic substitutes, the specificity of quinine in malaria was regarded as a medical axiom although millions of human beings continued to suffer recurrences of the disease despite large and continued doses of the alkaloid (p. 507).

Writing in the 14th edition of the *Encyclopedia Britannica* (1940) Sir Ronald Ross, Consultant in Malaria for the British Ministry of Pensions and the War Office, gave many intimations of the inadequacies of quinine as a chemoprophylactic in paludism.

Quinine prophylaxis has been of value on particular occasions such as in taking a body of troops over a critical period of fighting or passing through a heavily infected area in that it has checked attacks of malaria during that time. Bodies of troops in Salonika who were given quinine daily remained free as long as they were taking it but went down with malaria as soon as they stopped it showing that they were infected in spite of it.

Measures to rid carriers of the parasite are most difficult to put into practice. There is no settled or fixed dosage or time of administration of the specific remedy quinine or other of the cinchona bark extracts.

As to active anti-malarial treatment Sir Ronald Ross stated: "The fact that moderate doses of quinine will control actual attacks within a few days was fully verified (following the outbreak of malaria at Salonika in 1916) with very few exceptions. Almost every form of treatment that had ever been suggested—enormous doses of quinine reaching 100 grains per diem, smaller doses continued for three weeks or more, additional medication with arsenic and other drugs, continuous doses lasting for a month, and various kinds of interrupted dosage—all proved uncertain. Thirty grains of quinine continued every day for three weeks proved a failure. Intramuscular injections and even intravenous injections did no better. Men who were presumed to be cured relapsed again after returning to duty; a large proportion of those infected with malaria became almost useless for further service. Numerous nostrums advocated for malaria proved valueless, the only exceptions being one or two arsenical preparations which, however, were no better than ordinary quinine."

Despite these modifying statements concerning its specificity in malaria Sir Ronald did not question the preeminence of quinine as an antimalarial except to intimate that the important factor of building up and maintaining the general health, so as to assist the natural forces of the body to eliminate the malarial parasite, must not be forgotten. With advent of World War II the problem of malaria became more urgent particularly to American troops deployed in South Pacific areas, Africa, the Middle East, China, Burma and India.

Malaria soon became the outstanding medical problem of the war, not from the standpoint of mortality because there were relatively few deaths but because of the high degree of morbidity.

Although the assertion is repeatedly made that malaria is a disease for which there are specific therapeutic drugs and that it is a simple matter to overcome the infection, the fact remains that malaria is a most difficult disease to eradicate completely. For certain types of malaria, particularly Southwestern Pacific vivax malaria, it seems that complete recovery is entirely dependent upon the individual's defense mechanism. This is evidenced by the frequent relapses which occur after therapeutic measures considered adequate in patients who have had no opportunity to become reinfected. (Coggeshall in Cecil's Textbook of Medicine 7th edition, p. 433).

The problems of the Allied Medical Command relative to malaria intensified when Japan cut off supplies of quinine through acquisition of the Dutch colonial empire. Preparation of effective synthetic antimalarials then became a military matter of as much urgency as supplies of food and ammunition. As a result, innumerable synthetics were produced and tested for antimalarial activity. From these studies there evolved many potent preparations. At first quinacrine (atabrine) and pamaquine (plasmoquin) exhibited the superiority over quinine despite their toxicity. By the end of World War II, new synthetics replaced previously hailed miracle drugs. For security reasons the products bore code numbers: SN 7618, SN 12837, SN 13272, SN 13274, SN 13276, etc., and none was available for use by the practitioner. With astounding speed and efficiency the Council on Pharmacy of the American Medical Association clarified the antimalarial situation and gave official sanction to chloroquine, known also as paludrine, SN 12837 and guanafol hydrochloride to chloroquine, alias aralen, SN 7618, ontochin and resochin to pentaquine (SN 13276) and to isopentaquine (SN 13274). To establish indications for use of new antimalarial and evaluate their efficiency in comparison to quinine, it is necessary to review the life cycle of the malarial parasite (p. 507), identify on blood spreads *Plasmodium vivax*, *Plasmodium falciparum* and *Plasmodium malariae* (Fig. 85, p. 512) and differentiate the two commoner forms of plasmodia as set forth in Table (p. 4394).

DIFFERENTIAL DIAGNOSIS OF VIVAX AND FALCIPARUM MALARIAE FROM THICK AND THIN BLOOD SPREADS

| Observation | Vivax (Fig 38 p 508) | Falciparum (Fig 84 p 511) |
|----------------------------------|---|---|
| Parasitized erythrocyte | Larger and paler than normal | Normal or smaller than normal |
| Schuffner's granules | Present | Absent |
| Maurer's dots | Absent | Present |
| Pigmentation | Eosinophilic stippling | Brassy color but no pigmented spots |
| Parasites | In various stages | Only rings and crescents except terminally |
| Ring Forms | Approximate the diameter of the red cell | Smaller than the red cell |
| Ring forms (Marginal types) | Infrequent | Frequent |
| Multiple infections of cells | Rare | Common |
| Approximate numbers of parasites | 10 000 per cu mm | 500 000 per cu mm. |
| Cytoplasm of ring | Coarse | Hairlike |
| Trophozoite | Sprawling | Delicate |
| Schizonts | Present in peripheral blood with 12 to 24 merozoites in grape like clusters | Not seen in peripheral blood Obtain by marrow aspiration or spleen puncture Note 18 to 36 very small merozoites in irregular clusters |
| Gametocytes | Spherical or oval | Typical crescents |

Terminology

A principal difficulty in understanding malaria is its complicated terminology For purposes of clarification the following glossary is appended

Active treatment Symptomatic relief of acute attack without necessarily effecting radical cure (q v) As an agent in active therapy quinine is most effective

Aestivo autumnal malaria Synonym for infection by *Plasmodium falciparum*

Ague Synonym for malaria

Benign tertian malaria Infection with *Plasmodium vivax*

Blackwater fever A complicating hemoglobinuria probably due to quinine idiosyncrasy in the malarial patient

Causal Prophylaxis This involves destruction of pre erythrocytic forms probably resident in the liver (Shortt) With effective causal prophylaxis patients remain symptom free after antimalarial is discontinued and do not transmit infection to the biting mosquito Causal prophylaxis is accomplished only by chloroquine in falciparum invasions Neither chloroquine nor quinine is a true causal prophylactic

Exo erythrocytic phase (pre erythrocytic phase) The exo erythrocytic phase of malarial infection begins when sporozoites are introduced into the host It terminates when ring forms appear in red cells Roughly this corresponds to the incubation period of the disease during which Shortt has shown that sporozoites nest in the liver In this location only the falciparum form is vulnerable to antimalarials and then only to chloroquine a true causal prophylactic

Cerebral malaria Synonym for severe infections with *Plasmodium falciparum*

Falciparum malaria Infection with *Plasmodium falciparum* Referred to also as malignant tertian malaria aestivo autumnal malaria and subtertian malaria

Gametogony The sexual phase of development of the malarial plasmodium Microgametocyte and macrogametocyte are derived from schizonts After transference to the digestive tract of the mosquito male and female sexual elements unite to form gametes oocysts and sporozoites later to be introduced into man through bite of mosquito vector

Jungle fever Synonym for malaria

Macro gametocyte The female sexual form of the malarial plasmodium is produced by schizonts and demonstrable in peripheral blood (Fig 83 for vivax illustration 24 Fig 84 for falciparum illustrations 26 27 and 28 Fig 85 for malariae illustration 24)

Malignant tertian malaria Synonym for *Plasmodium falciparum* infections

Maurer's dots Irregular spots seen in parasitized erythrocytes containing *P. falciparum* (Fig 84 illustrations 9 to 12) Maurer's dots differ from Schüffner's granules and serve to differentiate vivax and falciparum infections

Merozoites A form of the malarial parasite derived from splitting of the mature schizont Merozoites are not demonstrable in peripheral blood They are exo erythrocytic until they attack an erythrocyte and become recognizable as ring forms within the red cell

Micro gametocyte The male sexual form of malarial parasite derived from the schizont Demonstrable in peripheral blood (Fig 83 for vivax illustration 23 Fig 84 for falciparum illustrations 25 26 and 27 Fig 85 for malariae illustration 23) After transferral to the digestive tract of the mosquito micro gametocytes and macro gametocytes form oocytes and sporozoites later to be introduced into man by bite of mosquito vector

Paludism Synonym for malaria

Plasmodium falciparum See Fig 84 p 511

Plasmodium malariae See Fig 85 p 512

Plasmodium vivax See Fig 83 p 508

Pre erythrocytic phase See exo erythrocytic phase

Quartan malaria Produced by *Plasmodium malariae* and characterized by chilling on the fourth day

Radical Cure Relief of symptoms of acute attack freedom from manifestations after drug has been discontinued non transmission of the disease to the mosquito when the patient is bitten during or after administration of the drug unless reinfectd Radical cure is accomplished by chloroquine in falciparum by the combination of isopentaquine and quinine in relapsing vivax and by chlorguanide in most vivax infections Quinine alone does not produce radical cure

Ring forms The earliest endo erythrocytic manifestation of the malarial invasion

Schizont A late phase of the endo reticulocytic portion of the life cycle of the malarial parasite. The schizont evolves from the trophozoite and terminates its existence on discharge of merozoites in the process of schizogony. Schizonts also produce male microgametocytes and female macrogametocytes for the sexual phase of the malarial life cycle (Fig 83 for vivax illustrations 16 to 20 Fig 84 for falciparum illustrations 16 to 20 Fig 85 for malariae illustrations 15 to 20).

Schuffner's granules Schuffner's granules are coarse red dots seen in parasitized erythrocytes in the vivax form of malaria (Fig 83 illustration 5). Schuffner's granules help to differentiate vivax from falciparum.

Sporozoite The toothpick shaped form of the malarial parasite as it is liberated from the oocyte in the stomach of the mosquito vector. Sporozoites make their way to the salivary glands of the mosquito from which they are transferred to man in the act of biting. Sporozoites are not identified in peripheral blood.

Subtertian malaria Synonym for *Plasmodium falciparum*.

Suppression Suppression is the therapeutic principle by which the patient though relieved of acute symptoms remains infectious to the mosquito vector and suffers relapse after discontinuance of the drug. In all probability the suppressive antimalarial drug attacks only endo erythrocytic forms; the parasite retreats to the parenchymal cells of the liver where it remains inaccessible to therapy (Shortt) and relapses are encountered. Compare chloroquine suppression in vivax to radical cure by chlorguanide in falciparum.

Tertian malaria A term used for both vivax (benign) and falciparum (malignant) infections. The term merely implies that the chill occurs on the third day.

Trophozoites The endo erythrocytic non reproductive phase. When ring forms develop pseudopodia the trophozoitic phase begins. It continues through formation of the schizont (Fig 83 for vivax illustrations 1 to 20 Fig 84 for falciparum illustrations 1 to 20 Fig 85 for malariae illustrations 1 to 20).

Antimalarial Agents

Tremendous forward strides have been taken in the eradication causal prophylaxis suppression and radical cure of malaria. Complete conquest of the disease is a goal that does not appear too far distant.

The current roster of antimalarials with their principal therapeutic uses and potential toxicity is shown in the table (p 4397).

Practical Management

Prophylaxis

1 For causal prophylaxis of falciparum prescribe 100 mg of chlor guanide hydrochloride (Abbott) or guanatol hydrochloride (Lilly) three times daily twice a week. Start two weeks before entering malarial zone. Continue four weeks after departure.

2 For suppression of vivax order 250 mg of chloroquine diphosphate (aralen Winthrop) twice daily twice a week Start two weeks before entering malarial zone Continue four weeks after departure

ANTIMALARIALS

| Product | Therapeutics | Toxicity |
|--|---|---|
| Aralen (Winthrop) | See chloroquine | |
| Atabrine | See quinacrine | |
| Camoquin | Newly developed synthetic with decided effect on vivax gametocytes asexual forms of vivax and falciparum See text | Negligible |
| Chlorguanide (paludrine guanotel hydrochloride SN 12837) N N R | With chloroquine best all purpose antimalarial Prefer for causal prophylaxis suppression and cure of falciparum See text | Negligible |
| Chloroquine (aralen sontochin resochin SN 7618) N N R | With chlorguanide best all purpose antimalarial Use for suppression and treatment of vivax and quartan infections Second choice to chlorguanide in falciparum For relapsing vivax switch to pentaquine-quinine in combination See also text | Negligible |
| Euquinine | As quinine | Reputedly less toxic than quinine |
| Guanotel | See chloroquine | |
| Isopentaquin (SN 13274) N N R | When commercially available use with quinine for treatment of relapsing vivax in infections See text | Negligible |
| Melarsen oxide | Antimalarial arsenical used experimentally | Arsenic poisoning (p 122) |
| Mepacrine | See quinacrine | |
| Paludrine | See chlorguanide | |
| Pamaquine naphthoate (plasmoquin) N N R | Replace by less toxic pentaquine-quinine combination for treatment of relapsing vivax See text | Considerable (p 519) |
| Pentaquine (SN 13276) | For use with quinine in relapsing vivax See text | Minor (p 521) |
| Plasmochin | See pamaquine | |
| Primaquine (SN 13272) | In experimental use to compete with pentaquine and isopentaquine | Negligible |
| Quinacrine (atabrin mepacrine) U S P | Replace by less toxic chloroquine for suppression and treatment of vivax See text | Considerable with skin pigmentation (p 520) |
| Quinine Bisulfate U S P | Most rapid antipyretic effect in acute attack but not a causal prophylactic Use with pentaquine in relapsing vivax infections See text | Considerable (p 518) |
| Pesochin SN 7618 | See chloroquine | |
| SN 12837 | See chloroquine | |
| SN 13272 | See pamaquine | |
| SN 13274 | See isopentaquine | |
| SN 13276 | See pentaquine | |
| Sontochin | See chloroquine | |
| Totaquine | Use as quinine An impure preparation that has the advantage of lesser cost | As quinine (p 518) |

3 For combined causal prophylaxis and suppression of all types of malaria prescribe chlorguanide or guanatol on Monday and Thursday and aralen on Tuesday and Friday

Immediate Care

1 Obtain thick and thin spreads of peripheral blood from fingertip stain by Wright method. Attempt to identify parasite and differentiate between vivax and falciparum. If in doubt assume that the vivax form is present if the patient is an American who has not been out of the country for considerable time or if there is a history of previous attacks.

2 Assuming that the infection is by vivax prefer chloroquine diphosphate (Aralen Winthrop). Prescribe 4 tablets each of 250 mg to total 1 gm. At the end of 6, 24 and 48 hours order 2 tablets each of 250 mg until a total of 10 tablets or 2.5 gm has been administered over the course of the forty eight hours.

3 If it is assumed or proven that the infection is falciparum prefer chlorguanide hydrochloride (Abbott) or guanatol hydrochloride (Lilly). Order 100 mg 3 times daily for ten days.

Continuing Care (Favorable Course)

1 For suppression of vivax infection prescribe 2 tablets of chloroquine diphosphate (aralen Winthrop) each of 250 mg twice weekly i.e. on Mondays and Thursdays.

2 For causal prophylaxis and suppression of falciparum infections order 100 mg of chlorguanide hydrochloride (Abbott) or of guanatol hydrochloride (Lilly) 3 times daily twice weekly i.e. on Mondays and Thursdays.

Continuing Care (Unfavorable Course)

1 If patient gives history of frequent recurrences assume that present attack is a relapse most likely of vivax origin. Prescribe 1 tablet of 10 mg of pentaquine phosphate (Abbott) and 0.5 gm of quinine sulfate 3 times daily for fourteen days.

2 If patient is severely ill comatose or unable to swallow resort to parenteral introduction of antimalarial. Improvise a solution of 0.2 gm of chloroquine base (aralen) in 5 cc of sterile aqueous solution and deposit intramuscularly. For second choice obtain ampul of atabrine (Winthrop) containing 200 mg with another ampul of 10 cc of sterile distilled water. Inject 10 cc in each buttock to total 20 cc containing 400 mg of antimalarial. For third choice prepare a solution of quinine dihydrochloride. Dissolve 0.6 gm in 300 cc of sterile physiologic saline. Introduce intravenously by the slow drip method.

3 For investigational use only are camoquin isopentaquine melarsen and primaquine.

4 As quinine substitutes i.e. euquinine or totaquine (p 4397).

5 Obsolete because of toxicity are pamaquine (plasmodium) and quinacrine (atabrine) for oral use.

MALE REPRODUCTIVE SYSTEM NEOPLASMS OF

Accessibility of the structures of the male reproductive system affords the practitioner an unusual opportunity for early diagnosis of asymptomatic malignancy. The seasoned practitioner never omits palpation of scrotal contents and prostate during routine physical examination. Additionally, he feels the male breast particularly in those patients who have been given androgen therapeutically (p 4192).

NEOPLASMS OF THE MALE EXTERNAL GENITALS

Practical Management

- 1 During routine examination palpate scrotum. Make note of any unusual swelling or tumor (p 2441).
- 2 In the dark room transilluminate scrotum and determine whether swelling is translucent or opaque.
- 3 With translucent swelling suspect hydrocele. Prepare to aspirate fluid and submit to clinical pathologist for cytodiagnosis by Papanicolaou method.
- 4 Obtain blood for serodiagnosis of syphilis and malignancy (p 4431).
- 5 Get chest x rays for evidences of tuberculosis.
- 6 With opaque swellings consider reference to urologist or surgeon.
- 7 In the absence of evidences of infection insist on biopsy of opaque tumor or actual exploratory examination.

NEOPLASMS OF PROSTATE AND MALE BREAST

- 1 During the course of each routine examination palpate the prostate. With positive findings refer the patient to the consultant surgeon and request a needle biopsy.
- 2 Obtain blood for serodiagnosis of syphilis and malignancy (p 4431) and for acid phosphatase determination (p 728).
- 3 Order cystoscopic examination to observe intravesical appearance of prostatic tumor.
- 4 On suspicion of malignancy prepare patient for prostatectomy and castration.
- 5 Postoperatively administer estrogen (p 4325).
- 6 During estrogen therapy constantly re-examine the male breast for evidences of gynecomastia and of possible malignancy. On suspicion insist on total mastectomy.

MANDELIC ACID NF

A non-metabolizable substance used as a urinary antiseptic. Administered orally, mandelic acid is excreted in the urine. When pH is 5.5 or less, urine becomes bactericidal or bacteriostatic for *E. coli*, *Aerobacter aerogenes*, *Streptococcus fecalis*, *Proteus*, *Pseudomonas*, *Alkaligenes*, *Salmonellae*, and *Shigellae*. For optimum effect, reduce fluid intake to 1000 cc so that a concentrated urine is voided.

Available Products

Ammonium Mandelate (Squibb) Enteric coated tablets 0.3 and 0.5 gm

Camdelate (Abbott) Tablets 0.543 gm of calcium mandelate

Mandelic Acid (Mallinckrodt Merck) Powder 4 gm thrice daily

Elixir of Mandelic Acid (Lilly) Twelve cc = 4 gm

Syrup Ammonium Mandelate (Smith) Fifteen cc = 4 gm

Mandelic Acid (0.3 gm) with *Ammonium Chloride* (0.23 gm) Enseals (Lilly)

Therapeutics (p 4626)

As a urinary antiseptic give 3 gm four times daily or the equivalent. Use test papers to assure pH of 5.5 or less in the urine. Supplement with ammonium chloride if necessary. Continue mandelic acid or one of its derivatives for twelve to fourteen days unless the patient develops nausea, diarrhea, dysuria or hematuria.

Mandelic acid is contraindicated in patients with renal insufficiency.

MEASLES

[*Roseola Morbilli*]

General Principles of Diagnosis and Treatment

1 The virus of measles (Fig 64 p 410 Fig 65 p 411) is resistant to antibiotic agents with the possible exception of aureomycin and chloramphenicol.

2 Measles vaccine under experimental observation has not had large scale human trial and is not commercially available.

Practical Management**Prophylaxis**

1 Human gamma globulin preferably given on the fifth day after exposure completely protects in 79 per cent of instances and modifies the disease in the remaining 21 per cent. For children under five years of age intramuscular injections of 1 to 2.5 cc are required; older children and adults need 5 to 15 cc according to the undernoted schedule (p 4401).

2 Modified measles produces permanent immunity and is preferred to complete prevention.

Immediate Care

1 Institute general measures for nonspecific treatment of the infected patient (p 67).

2 Patients with clinical measles require penicillin injections for

prevention and treatment of pyrogenic complications. Give oral doses of crystalline penicillin G or alurumum penicillin in food or drinks using 50 000 units every 3 or 4 hours or deposit penicillin G in aqueous solution or suspensions in a dose of 300 000 to 600 000 units once daily.

TABLE OF DOSAGES OF IMMUNE SERUM GLOBULIN (HUMAN)

| Patient's Weight—lbs. | Dose for Modification (0.02 cc per pound) | Dose for Prevention (0.1 cc per pound) |
|--------------------------|---|--|
| 15 | 0.30 cc | 1.50 cc. |
| 20 | 0.40 cc | 2.00 cc. |
| 25 | 0.50 cc | 2.50 cc. |
| 30 | 0.60 cc | 3.00 cc. |
| 35 | 0.70 cc | 3.50 cc. |
| 40 | 0.80 cc. | 4.00 cc. |
| 45 | 0.90 cc | 4.50 cc. |
| 50 | 1.00 cc | 5.00 cc. |
| 60 | 1.20 cc | 6.00 cc. |
| 70 | 1.40 cc | 7.00 cc. |
| 80 | 1.60 cc | 8.00 cc. |
| 90 | 1.80 cc | 9.00 cc. |
| 100 | 2.00 cc. | 10.00 cc. |
| 125 | 2.50 cc. | 12.50 cc. |
| 150 | 3.00 cc | 15.00 cc. |

3 Prescribe oral antihistamine (200 mg daily of *p*-ribenzamine or benadryl) to prevent hypersensitivity reactions especially measles encephalopathy (p 4307)

4 Aureomycin may prove even more useful than penicillin since it is virucidal as well as active against secondary invaders

5 Human Measles Immune Serum is obsolete

MELITURIAS

The term, melituria is used to denote the presence in urine of abnormal amounts of sugar. In its broadest sense melituria is an inclusive concept that covers glycosuria, levulosuria, pentosuria, lactosuria, galactosuria, fructosuria, maltosuria and sucrosuria.

Of meliturias only hyperglycemic glycosuria of diabetes mellitus (p 1264) has important clinical significance for patient and practitioner. Hence reduction of Benedict solution (pp 3676 and 3677) challenges the physician to differentiate clearly between an innocent melituria and the significant hyperglycemic glycosuria of the diabetic.

For clarification of melituria the following protocol is suggested:

1 In the presence of physician or nurse have patient void into a clean vessel to preclude accidental or deliberate contamination of the specimen.

2 Exclude pseudo-reduction of Benedict solution due to substances other than sugar (p 3674)

3 Identify sugar responsible for melituria according to accompanying chart (p 4402) Additionally test for acetonuria (p 4384)

4 To confirm tests performed in office laboratory send a 24 hour sample to clinical pathologist for additional information including polariscopy and crystallization with phenylhydrazine

5 Observe effect on melituria of hyperalimentation using a diet high in concentrated carbohydrate foods (p 672)

6 Observe effect on melituria of insulin injection (p 1241)

7 Obtain bloods for sugar determinations (p 3714) after patient has fasted twelve hours and again one and two hours after ingestion of dextrose test meal (p 3716)

8 If blood sugars are within range of normal consult Table of Differential Diagnosis of Non Hyperglycemic Glycosurias (p 4405)

9 In presence of elevated blood sugars consult Table of Differential Diagnosis of Hyperglycemic Glycosurias (p 4407)

10 Bear in mind that diabetes mellitus is a disturbance of such great frequency that it may co exist in potential or full blown form with any other melituria

Differential Diagnosis of

Meliturias

In the investigation of melituria the practitioner recalls these important axioms

(1) The presence of melituria does not necessarily signify that the patient suffers from diabetes mellitus (2) Absence of melituria does not necessarily exclude the diagnosis of diabetes mellitus since the patient may have been aglycosuric at the time of voiding

| Observation | Glucose | Levulose | Panlose | Fructose | Lactose | Galactose | Maltose or Sucrose |
|--|----------------|-----------|---------|----------|---------|-----------|--------------------|
| Yeast Fermentation | Yes | Yes | No | Yes | 15% | Yes | No |
| Hyperglycemia | Present | 0 | 0 | 0 | 0 | 0 | 0 |
| Acetonuria | May be present | 0 | 0 | 0 | 0 | 0 | 0 |
| Clinical Symptoms of Diabetes Mellitus | May be present | 0 | 0 | 0 | 0 | 0 | 0 |
| Response to Hyperalimentation | Increase | 0 | 0 | 0 | 0 | 0 | 0 |
| Response to Insulin | Decrease | 0 | 0 | 0 | 0 | 0 | 0 |
| Special Tests | Rubner | Borchardt | Bial | — | Rubner | — | — |
| Polarization | Right | Left | 0 | 0 | Right | 0 | 0 |

Borchardt Test

The Borchardt test detects and identifies levulose in urine (see below)

- 1 Make a 25% solution of hydrochloric acid by adding 2 parts of concentrated hydrochloric acid to 1 part of water
- 2 To 10 cc of urine add 5 cc of 25% hydrochloric acid, and a few crystals of resorcinol
- 3 Boil mixture for 30 seconds In presence of levulose solution turns red
- 4 Cool solution and add solid sodium hydroxide
- 5 To alkaline mixture add 2 cc of acetic-ether and shake In presence of levulose ether takes on a yellow color

Rubner Test

The Rubner test differentiates lactosuria (p 4404) from glycosuria

- 1 To 10 cc of urine add 2 gm of lead acetate
- 2 Shake and filter
- 3 Boil filtrate Add 2 cc of strong ammonia water
- 4 Heat mixture In presence of lactose solution turns a brick red and a red precipitate settles out In presence of glucose solution turns red and a yellow precipitate settles out

Bial Test

The Bial test detects pentosuria (see below)

- 1 Remove glucose from urine by fermentation.
- 2 Dissolve 1.5 gm. orcinol in 500 cc of 30% hydrochloric acid Add 1 cc of 10% ferric chloride
- 3 Place 5 cc of reagent in test tube and heat.
- 4 Remove test tube from flame Add 2 cc of urine drop by drop In presence of pentose a green color develops

Levulosuria

The presence of levulose in urine is detected by reduction of copper salt in Benedict solution (p 3676) and by further differentiation through the Borchardt reaction (above) Verification of the simple test is required and a complete 24 hour yield of urine should be sent to the clinical pathologist for identification of the characteristic osazone crystals and for polarization since levulose alone of the sugars rotates polarized light to the left

Essential Levulosuria In rare instances levulosuria occurs with glycosuria in severe diabetes mellitus With this exception levulosuria is noted only as a rare metabolic anomaly The condition is familial and benign It is not accompanied by hyperglycemia and is uninfluenced by hyperalimentation or injections of insulin

Essential levulosuria requires no treatment The patient should be informed of the presence of a reducing substance in the urine in order to avoid future error

Pentosuria

Pentosuria is recognized by reduction of copper salt in Benedict solution and by the positive Bial reaction (above) The diagnosis should be verified by the clinical pathologist who may identify the characteristic pentosazon crystals and obtain specific fermentations with bacteria and yeasts

Alimentary Pentosuria Alimentary pentosuria is a temporary condition that occurs in normals after ingestion of large quantities of

fruits of high pentose content These include prunes cherries grapes and plums

Alimentary pentosuria has no clinical significance It disappears with the elimination from the diet of high pentose fruit The condition requires no treatment other than notification of the patient of the presence of a reducing substance in urine While there is no evidence that pentosurias produce any later difficulty it may be wise to suggest limited ingestion of high pentose fruits

Essential Pentosuria Essential or chronic pentosuria like essential levulosuria is a relatively rare and benign familial and congenital metabolic anomaly It has no particular clinical significance unless it is mistaken for diabetes mellitus The utilization of other carbohydrates is unimpaired

The patient may follow a normal diet though it may be wise to limit the quantity of high pentose fruits such as prunes cherries grapes and plums

Fructosuria

Fructosuria is an exceedingly rare familial and congenital benign metabolic disorder Fructose causes a reduction of the copper solution in the Benedict test (p 3676) Its final identification requires the assistance of the clinical pathologist since the sugar gives none of the simple reactions that can be performed in the office laboratory (p 4403)

Essential fructosuria requires no treatment except notification of the patient of the presence of the melituria

Lactosuria

Lactose occasionally but not invariably produces reduction of copper salt in Benedict solution (p 3674) It may be identified in the office laboratory through the presence of a red precipitate in the Rubner test (p 4403) More exact identification is possible through assistance of the clinical pathologist who may produce characteristic lactosazone crystals with phenylhydrazine and perform fermentation tests with specific bacteria

Contrary to the general belief lactosuria does not occur normally during pregnancy It is physiologic in the postpartum period and during the puerperium (p 2715) while the mother is lactating

Physiologic lactosuria has no pathological significance Its main importance lies in its recognition lest the physician erroneously conclude that his patient has developed a true diabetes mellitus during the course of child bearing

Galactosuria Maltosuria and Sucrosuria

Galactosuria maltosuria and sucrosuria do not occur spontaneously in health or disease Galactosuria is artificially produced when large quantities of the sugar are ingested for the purpose of testing liver function (p 1949) Maltosuria and sucrosuria result from accidental or deliberate contamination of the specimen when after voiding malt sugar or cane sugar is introduced

Glycosuria (Glucosuria)

Of the meliturias (p 4402) glycosuria alone may have important clinical significance for the practitioner. In its presence the complete practitioner sets himself the task of positively affirming or surely excluding the presence of diabetes mellitus (p 1246).

Pathologic Physiology A minute quantity of sugar undetectable by routine laboratory methods is present in urine at all times. A detectable amount may be passed by the normal individual (a) under physiologic conditions (hyperalimentation) (b) during stress and (c) as the result of drug administration (morphine anesthetics etc).

There are at least four mechanisms by which glycosuria may be produced

1 Concentration of glucose in the arterial blood of the glomeruli beyond threshold value (150 to 180 mg \times 100 cc)

2 Excessive rate of glomerular filtration such as occurs in advanced nephropathies (p 2364)

3 Decreased rate of tubular reabsorption as seen clinically in renal diabetes (p 4406) and experimentally in phloridzin poisoning

4 Experimental puncture of the specific sugar regulating center of the medulla (Claude Bernard)

Of the factors involved in glycosuria only hyperglycemia can be measured by the clinician. Even this figure is subject to interpretation since the determination is made on blood obtained from a peripheral vein where the concentration of sugar is lower than in the renal artery. Despite this error which has more academic than practical significance glycosurias are divisible into those which occur with a normal blood sugar level (hypoglycemic glycosurias) and those in which there is elevation of fasting sugar or sustained high levels following the test meal (hyperglycemic glycosuria).

Differential Diagnosis of

Non Hyperglycemic Glycosurias

Non hyperglycemic glycosuria may be transitory (alimentary psychogenic pharmacologic or parturient) or more persistent (nephropathic or renal diabetes). Phloridzin diabetes occurs only in the experimental animal.

CLINICAL MANIFESTATIONS AND DIAGNOSTIC FEATURES

| | |
|---------------|---|
| Alimentary | History of gorging. Normal fasting blood sugar and sugar tolerance test (p 1250). Aglycosuria on normal diet. May be potential diabetic (p 1246). |
| Psychogenic | History of emotional or traumatic disturbance. Normal tests after quiescence. |
| Pharmacologic | After anesthesia morphine (p 3854) and adrenergics (p 3876). |
| Pregnancy | In latter months (p 2673). Probably from hyperpituitarism. Unaccompanied by symptoms of diabetes mellitus unless hyperglycemic. Non hyperglycemic glycosuria disappears after childbirth. Exclude lactosuria postpartum and in puerperium (p 2715). |

| | |
|----------------------|--|
| Nephropathia | With advanced nephropathy (p 2352) especially if due to failure of tubular reabsorption. Note marked depression of renal functional tests but neither clinical symptoms or signs of diabetes mellitus. Note that the two conditions may coexist. |
| Phloridzin Poisoning | Experimental lesion of animals. Poison prevents tubular reabsorption of sugar as in renal diabetes (p 4406). |
| Renal Diabetes | Benign metabolic disorder (p 4406). Normal fasting blood sugar and sugar tolerance test (p 1250). Uninfluenced by insulin or hyperalimentation. Asymptomatic. Requires no treatment. |

RENAL DIABETES

[Renal Glycosuria Benign Glycosuria Diabetes Innocens]

Renal diabetes is an inborn error of metabolism that has no untoward clinical implication. Its primary importance rests in recognition of its benign nature so that the patient is not subjected to treatment for diabetes mellitus (p 1252).

Clinical Manifestations In renal diabetes considerable quantities of glucose appear in the urine at all times. The glycosuria is independent of hyperalimentation or fasting; it is not eliminated by administration of insulin.

In all likelihood the metabolic error is a failure of normal reabsorption of glucose by the renal tubules presumably because of inadequate phosphorylation (Fanconi's syndrome). Patients with renal diabetes resemble animals poisoned with phloridzin; they do not have hyperglycemia and the degree of glycosuria is independent of carbohydrate intake.

The incidence of renal diabetes is variously estimated. Some authorities regard the condition as infrequent whereas others place the incidence as high as 1 to 2 per cent of otherwise normal individuals. During World War I the author encountered a large group in a hospital specializing in metabolic abnormalities but has met with only one example in thirty years of private practice.

Diagnosis The diagnosis of renal diabetes is established by the constant finding of urinary sugar in individuals who present no symptoms of diabetes mellitus (p 1246). In such patients the fasting blood sugar is within normal limits and the sugar tolerance curve appears normal in all respects; ketosis is not encountered when the patient fasts; glycosuria does not increase when the patient over eats; nor does it tend to lessen when he fasts; doses of insulin have little or no effect on the extent of glycosuria; the urinary sugar may be identified as glucose (p 3674) thus eliminating the presence of one of the rarer varieties of melituria (p 4402).

Course and Prognosis Authorities differ as to the outlook for patients with renal glycosuria. Writing in Cecil's Textbook of Medicine Loeb states that the patient should be considered a potential diabetic and re-examined at frequent intervals particularly when a family history of diabetes has been elicited. On the other hand Cantarow concludes that so far as can be determined it (renal glycosuria) never results in diabetes mellitus nor in any metabolic derangement whatsoever.

In view of the discrepancy between these authoritative pronouncements the practitioner does best to acquaint his patient with the nature of the abnormality give complete reassurance as to the present outlook request re-examinations three or four times annually but other wise recommend a course of skillful neglect

Differential Diagnosis of

Hyperglycemic Glycosuria

Unlike hypoglycemic glycosurias (p 4405) hyperglycemic glycosurias are persistent unless the fundamental etiologic mechanism can be eradicated (hyperthyroidism and increased intracranial pressure) or controlled (dietary and insulin treatment of diabetes mellitus) Although the majority of hyperglycemic glycosurias occur in pancreatic diabetes they also may accompany other endocrinopathies as well as renal hepatic and neurologic disturbances

CLINICAL MANIFESTATIONS AND DIAGNOSTIC FEATURES

| | |
|---|---|
| Hyperthyroidism | With tachycardia exophthalmos tremor loss of weight and elevation of B M \square (p 1192) Note response to antithyroid drugs Remember that hyperthyroidism and diabetes mellitus often coexist |
| Hyperpituitarism | Acromegaly with characteristic overgrowth of bones of hands feet and face (p 1156) Pituitary basophilism (Cushing) with girdle obesity cutaneous striae hypertension and hypogonadism (p 1159) Get x rays of sella turcica Consult neurologist and neurosurgeon |
| Tumor of Adrenal Cortex | With manifestations of pituitary basophilism (p 1159) Refer to urologist for per renal insufflation and x rays Consider surgery |
| Increased Intra Cranial Pressure | Particularly subarachnoid hemorrhage following head injuries or with brain tumors (p 1421) Consult neurologist and neurologic surgeon Consider exploratory craniotomy |
| Nephropathy | With marked depression of renal function particularly in advanced nephropathies involving glomeruli (p 23b4) With combined symptoms of diabetes mellitus and evidences of acidosis both conditions may co exist |
| Hemochromatosis | In adult males exposed to metal in industry or by wine drinking (p 1976) Note pigmentation of skin (bronze diabetes) chemical test \square for iron in skin enlargement of liver and atrophy of testes with manifestations of hypogonadism (p 2412) |
| VonGierke Disease (Glycogen Disease) | In children with enlargement of liver and spleen (p 1978) Note alternating hyperglycemia and hypoglycemia with or without ketosis |
| Diabetes Mellitus | With hyperglycemia decreased sugar tolerance and increased glycosuria following hyperalimentation (p 1246) Note favorable response to insulin (p 1255) and tendency to develop ketosis |

MENINGOCOCCAL INFECTIONS

Principles of Diagnosis and Therapy

1 Meningococci may be grown from throat cultures of many healthy carriers (p 209) The organism also may invade and produce atypical or subclinical attacks of respiratory infection resembling the common cold or influenza As a result immune bodies are demonstrable in bloods of many who give no clear history of classical meningococcal infection

Least often patients suffer acute or chronic meningococemia with its characteristic purpuric eruption (Fig 23 p 212) cerebrospinal meningitis with demonstrable gram negative intracellular cocci in cerebrospinal fluid (Fig E B p 47) and the syndrome of Waterhouse and Friderichsen in which manifestations of meningococemia are associated with adrenocortical insufficiency (p 211)

2 While a natural active immunity seems to develop frequently efforts to stimulate artificial active immunity by means of meningococcus vaccine (Sherman) have never been successful

3 Despite discouraging prospects in active immunization curative treatment of meningococcal infection is an embarrassment of riches The organism is sensitive to penicillin sulfonamide aureomycin chloramphenicol and streptomycin So potent are newly introduced antibiotics that antimeningococcus heterologous serum (once regarded as a most potent anti infective agent) already has been dropped from the approved list of the Council on Pharmacy and Chemistry of the American Medical Association

Practical Management

Immediate Care

1 Notify health authorities of the presence of the infection

2 Preferably transfer the patient to a hospital equipped for the care of the infected patient (p 67)

3 Protect exposed members of the family other contacts nursing attendants and medical staff with prophylactic chemotherapy Orally choose between daily doses of 2 gm of sulfadiazine or sulfamerazine with 1 teaspoonful of bicarbonate of soda or tablets of 250 000 units of crystalline potassium penicillin G given twice daily For preferred parenteral chemoprophylaxis make 3 daily deposits each of 300 000 units of crystalline procaine penicillin G in aqueous suspension

4 Have throat cultures made of contacts for detection of carriers To carriers give daily deposits each of 300 000 units of crystalline procaine penicillin G in aqueous suspension until two successive negative throat cultures have been reported

5 Because of potential gravity of meningococcal infections treat subclinical as well as classical meningococcal invasions with intensive combined antibiotic therapy Particularly during an epidemic regard any illness resembling the upper respiratory infection or influenza as

evidence of meningococcal invasion Institute therapy without awaiting bacteriological confirmation of clinical suspicions

6 In the days when penicillin supplies were short the majority of clinicians favored soluble sulfonamide as the agent of choice in the treatment of meningococcemia In these early experiences comparisons were made between adequate doses of sulfonamide and what are currently regarded as relatively inconsequential doses of penicillin (30 000 units every three hours)

7 The debate as to the favored preparation in the treatment of meningococcal infection need not concern the private practitioner Confronted with the challenge of treating an individual patient use both antibiotic agents and take advantage of their cumulative or synergistic actions

8 In milder infections particularly during an epidemic when major efforts must be devoted to the acutely ill oral therapy may be required For priming doses give two million units of crystalline potassium penicillin G (4 tablets each of 500 000 units) together with 2 gm each of sulfadiazine and sulfamerazine and a teaspoonful of bicarbonate of soda A few hours later start maintenance doses of 500 000 units of crystalline potassium penicillin G and 0.5 gm each of the soluble sulfonamides at 4 6 or 8 hour intervals depending on intensity of infection and patient response

9 In more severe infections set up intravenous drip For the priming dose infuse 1 million units of crystalline potassium penicillin G in physiologic saline or molar lactate solution As soon as this has been introduced add to the drip 2.5 gm each of sodium sulfadiazine and sodium sulfamerazine dissolved in at least another 200 cc of diluent

10 If there are evidences of adrenocortical insufficiency in addition to penicillin sulfonamide introduce 250 to 500 cc of plasma Make an intramuscular injection of 20 mg of desoxycorticosterone acetate in oil if cortone or ACTH cannot be obtained

11 Whether antibiotics are given orally or intravenously prescribe prophylactic antihistamine using 200 mg daily of pyribenzamine or benadryl If the patient is unable to swallow introduce into the intravenous drip or intramuscularly 5 cc of 1% benadryl

12 If diagnosis is in doubt perform lumbar puncture preferably after the priming dose of antibiotic has been introduced The post treatment tap when blood antibiotic levels are at their height favors development of high titers of antibiotic in cerebrospinal fluid

13 As to intrathecal medication there is currently general agreement that this cumbersome route of administration is contrary to the best interests of the patient

Hoynes (Ill M J 94 295 1949) lists eleven objections to intrathecal therapy They include discomfort and pain to the patient tendency to produce opisthotonos uncertainty that the amount of remedy is sufficient to control infection repeated spinal punctures increase chances of producing secondary infection possible injury to intervertebral disks which may result in permanent disability hemorrhage or throm

basis of vessels resulting in degenerative changes in the spinal cord, production of adhesions blocks and hydrocephalus slower recovery greater likelihood of relapse failure to reduce fatality rates and theoretical fact that the procedure is unscientific and has no advantages though it is accompanied by hazards

In similar vein Wilson Rupp and Wilson (J A M A 140 1076 1949) state their opinion that there is no doubt that intrathecal injections of drugs anesthetics and antibiotics produce neurologic complications in many cases The neurologic residuals are often serious permanent disabling and unamenable to any known therapy These authors go on to say that when adequate spinal fluid concentrations of an agent can be obtained following systemic administration as with the sulfonamide compounds and penicillin intrathecal administration is truly meddlesome mischief and is strictly contraindicated Since the usual direction of the flow of cerebrospinal fluid is from the ventricles to the subarachnoid space it is doubtful that an appreciable quantity of any medicament introduced into the lumbar sac diffuses to any extent through the subarachnoid pathways Probably any benefit from therapeutic substances injected intrathecally occurs only after absorption into the blood stream has occurred Thoughtful consideration of these facts may avoid many tragic neurologic sequelae without depriving the patient of every chance of maximum therapeutic aid

Continuing Care (Favorable Course)

1 Maintain antibiotic levels by continued administration of sulfonamide and penicillin If course is favorable discontinue intravenous drip Give sulfonamide orally and penicillin by intramuscular injection Prescribe daily doses of 1.5 to 2 gm each of sulfadiazine and sulfamerazine with a teaspoonful of bicarbonate of soda Deposit intramuscularly 600 000 units of crystalline procaine penicillin G in aqueous suspension

2 Continue antihistamine for at least two weeks after last dose of antibiotic

Continuing Care (Unfavorable Course)

1 Maintain intravenous drip Increase daily dose of penicillin as high as 25 million units of crystalline potassium penicillin G If there are no evidences of sulfonamide toxicity by clinical examination urine analysis and blood counts repeat priming dose of sodium sulfadiazine and sodium sulfamerazine twice or thrice daily

2 If patient is sulfonamide sensitive or manifestations of toxicity develop or if there is no response to combined sulfonamide/penicillin substitute or add aureomycin Introduce 200 to 500 mg of aureomycin hydrochloride (for intravenous use) in the diluent of 0.75% sodium carbonate provided by the manufacturer

3 If patient is penicillin sensitive continue with sulfonamide and supplement with aureomycin as above

4 As a substitute for aureomycin hold streptomycin in reserve Meningococci are sensitive to this antibiotic but to a lesser degree than

to penicillin aureomycin or sulfonamide Deposit 1 to 2 gm intramuscularly for priming dose Continue 0.5 to 1 gm at 6 or 12 hour intervals as indicated

5 II clinical picture is predominantly that of adrenocortical insufficiency institute treatment for the Addisonian crisis (p 4159)

6 Since meningococcal infections tend to relapse continue antibiotics for at least three to five afebrile days

MENSTRUATION, OVULATION AND IMPREGNATION

[Temperature Variations Due to]

In addition to individual and diurnal variations (p 3484) readings of body temperature reveal cyclic fluctuations during active female sexual life To obtain a suitable graph the woman records daily rectal readings on arising each morning for a span of at least one complete month

Temperature Curves of Normal Menstrual Cycles

During the normal menstrual cycle there is a characteristic and individual diphasic curve consisting of a lower postmenstrual phase a low to high shift at ovulation and a higher premenstrual level The postmenstrual phase which lasts for about two weeks spans the period between cessation of flow and ovulation Ovulation is characterized by a low to high shift approximating 0.4-0.8 F This higher level is sustained during the premenstrual phase which terminates just before or at the time of the next bleeding

Temperature Curve in Anovulatory Menstruation

The woman who fails to ovulate for whatever reason displays a monophasic temperature graph during her menstrual cycle there is no demonstrable low to high shift premenstrual and postmenstrual phases are indistinguishable

Temperature Curve of Pregnancy

When fertilization is successfully accomplished the postmenstrual phase is unmodified the ovulatory low to high shift occurs as previously but the premenstrual elevation persists for sixteen days or more This latter phenomenon in association with amenorrhea provides earliest suggestion of pregnancy and constitutes what has been facetiously termed the poor man's rabbit test

Practical Considerations

In practice unfortunately basal temperature graphs are not as easily interpreted as the text suggests Many variables impinge to create confusion so that it is often necessary to continue observations for several months in order to establish a definitive pattern

Some technical discrepancies may be avoided if temperatures are

basis of vessels resulting in degenerative changes in the spinal cord production of adhesions blocks and hydrocephalus slower recovery greater likelihood of relapse failure to reduce fatality rates and the retical fact that the procedure is unscientific and has no advantages though it is accompanied by hazards

In similar vein Wilson Rupp and Wilson (J A M A 140 1076 1949) state their opinion that there is no doubt that intrathecal injections of drugs anesthetics and antibiotics produce neurologic complications in many cases The neurologic residuals are often serious permanent disabling and unamenable to any known therapy These authors go on to say that when adequate spinal fluid concentrations of an agent can be obtained following systemic administration as with the sulfonamide compounds and penicillin intrathecal administration is truly meddlesome mischief and is strictly contraindicated Since the usual direction of the flow of cerebrospinal fluid is from the ventricles to the subarachnoid space it is doubtful that an appreciable quantity of any medicament introduced into the lumbar sac diffuses to any extent through the subarachnoid pathways Probably any benefit from therapeutic substances injected intrathecally occurs only after absorption into the blood stream has occurred Thoughtful consideration of these facts may avoid many tragic neurologic sequelae without depriving the patient of every chance of maximum therapeutic aid

Continuing Care (Favorable Course)

- 1 Maintain antibiotic levels by continued administration of sulfonamide and penicillin If course is favorable discontinue intravenous drip Give sulfonamide orally and penicillin by intramuscular injection Prescribe daily doses of 1.5 to 2 gm each of sulfadiazine and sulfamerazine with a teaspoonful of bicarbonate of soda Deposit intramuscularly 600 000 units of crystalline procaine penicillin G in aqueous suspension

- 2 Continue antihistamine for at least two weeks after last dose of antibiotic

Continuing Care (Unfavorable Course)

- 1 Maintain intravenous drip Increase daily dose of penicillin as high as 25 million units of crystalline potassium penicillin G If there are no evidences of sulfonamide toxicity by clinical examination urine analysis and blood counts repeat priming dose of sodium sulfadiazine and sodium sulfamerazine twice or thrice daily

- 2 If patient is sulfonamide sensitive or manifestations of toxicity develop or if there is no response to combined sulfonamide/penicillin substitute or add aureomycin Introduce 200 to 500 mg of aureomycin hydrochloride (for intravenous use) in the diluent of 0.75% sodium carbonate provided by the manufacturer

- 3 If patient is penicillin sensitive continue with sulfonamide and supplement with aureomycin as above

- 4 As a substitute for aureomycin hold streptomycin in reserve Meningococci are sensitive to this antibiotic but to a lesser degree than

MERCURY

As an anti infective agent mercury the great specific of the Middle Ages and the Restoration period persists only as a local or topical application. It is obsolete as an anti syphilitic and has even been replaced as a pediculocide. Currently its principal systemic use is for diuresis (p 4305)

Toxicity

See Mercurialism (p 765)

Antidote

See BAL (p 4251)

METHENAMINE

[Hexamethylenamine Formin Urotropin]

Although methenamine remains a Council approved product it is a useless and obsolescent anti infective agent and urinary antiseptic (p 4626)

Available Products

Methenamine (Abbott) Tablets 0.3 and 0.5 gm

Urotropin (Schering) Tablets 0.3 and 0.5 gm

Therapeutics

Methenamine should not be used despite its continued exploitation. As a urinary antiseptic in an acid medium mandelic acid is preferable for all purpose urinary antiseptics; urotropin cannot compare with sulfonamide, streptomycin, aureomycin and chloramphenicol.

MOLLUSCUM CONTAGIOSUM

Molluscum contagiosum is a cutaneous virus infection (p 3287) which is too insignificant to warrant systemic therapy with aureomycin or chloramphenicol despite the fact that either or both of these antibiotics should prove successful in its management (Fig 70 D and E p 436)

MONILIASIS

[Through Perleche Bronchomoniasis 'Thresher's Lung']

General Principles of Diagnosis and Therapy

1 Cutaneous and mucosal moniliasis respond to persistent local therapy. Systemic moniliasis especially bronchorespiratory (Fig 81 p 503) is less easily attacked by anti infective agents.

taken at exactly the same time each morning before the woman has risen from bed and evacuated rectum and bladder. Other vagaries arise from intercurrent infection or interpolation of any of numerous factors responsible for aseptic pyrexia (p 23). In some instances fluctuations are due to imponderables and at least three or four monthly cycles require registration before definitive conclusions are merited.

When there can be eliminated fluctuations resulting from factors other than those concerned with the physiology of menstruation the following conclusions are justifiable from basal temperature readings taken throughout the menstrual cycle.

1 A monophasic temperature pattern suggests that the woman has not ovulated at least during the period of observation. She may be regarded at least temporarily as infertile due to hormonal deficiency involving anterior pituitary and/or gonadal secretions.

2 A diphasic curve with a lower postmenstrual level and a higher premenstrual phase suggests that the woman has ovulated at the time of the low to high shift. She may be regarded as fertile so far as hormonal factors are concerned.

3 The low to high shift separating postmenstrual from premenstrual phases (particularly if it occurs in the middle of the cycle and is otherwise inexplicable) probably indicates ovulation and onset of the period of fertility or vulnerability. This brief span of eighteen to thirty six hours presents maximum opportunity for impregnation.

Those desirous of progeny are advised to have intercourse immediately after the low to high shift.

Those who must or would avoid impregnation are advised to refrain from intercourse unless they practice contraception (p 2502).

4 Except for the day preceding the low to high shift and for a span of seventy two to ninety six hours thereafter the woman may be regarded as temporarily infertile. Despite potent insemination impregnation is unlikely during the safe period preceding and following the low to high shift.

Those who must refrain from childbearing need not necessarily use contraceptive devices at these times.

5 Maintenance of the premenstrual elevation for approximately fourteen days with a fall to the postmenstrual level (particularly if associated with menstrual bleeding) suggests ovulation but not impregnation.

6 Persistence of the premenstrual elevation following the low to high ovulatory shift for sixteen days or more (particularly if associated with amenorrhea) suggests the woman has both ovulated and impregnated.

7 Conversion of the anovulatory monophasic temperature pattern to the ovulatory diphasic curve (particularly during concurrent hormonal therapy) indicates a restitution to normal.

8 The infertile woman who presents a normal diphasic curve or a monophasic curve which has been converted to the diphasic pattern as the result of therapy may be regarded as barren due to factors other than hormonal deficiency (pp 2419 and 2492).

MORPHINE DERIVATIVES AND SYNTHETIC SUBSTITUTES

The field of analgesia has been enriched by addition of at least one new opium derivative and several synthetic substitutes whose properties supplement and in certain instances substitute for preparations listed in Table 220 (p 3854). Certain of these products prepared by German scientists bear several names. To avoid understandable confusion the accompanying table has been prepared (p 4416).

1 *Dihydrocodeinone Bitartrate NNR* (mercoidinone hycodan bitartrate dicodid) shares with codeine the property of being the most effective cough remedy. It resembles codeine in that it is habit forming and possesses the undesirable side effects of causing constipation and difficulty in urination.

2 *Meperidine Hydrochloride* (Loupecaine Hydrochloride or Demerol Winthrop) is a synthetic resembling atropine in its chemical structure. With methadone meperidine shares the position of preparation of choice in oral and parenteral control of pain. It depresses the central nervous system with a morphine like effect simultaneously as opposed to morphine demerol depresses smooth muscle in a manner simulating that of atropine hence it is free from untoward morphine side effects of constipation and disturbances of urination. Oral doses of 100 mg of demerol elevate the pain threshold within fifteen minutes producing satisfactory analgesia which lasts for several hours. Because of its atropine like spasmolytic action visceral pain is relieved more effectively than cerebral or neurogenic pain. Comparative studies indicate that 50 mg injected intramuscularly are more potent than 22 mg of codeine and 5 mg of morphine. In conditions associated with spasm (pregnancy asthma biliary urinary or gastro-intestinal colic) demerol is particularly effective.

Except for atropine like drying of the mouth with flushing of the face demerol has no significant side effects except for occasional nausea and vomiting. Its limitations include feeble antitussive effect, tendency to habituation and unavailability for intravenous use.

3 *Methadone hydrochloride* is a synthetic marketed as methadone (Abbott Malsengill) adanon (Winthrop) and dolophene (Lilly). Its chemical constitution is 6-dimethylamino 4,4-diphenyl 3-heptanone hydrochloride. Methadone shares with meperidine the position of analgesic of choice. It does not have the atropine like qualities of meperidine and it is not a sedative making it less useful for relief of nocturnal pain but more useful for analgesia during waking hours. Methadone has definite addiction liability its effect on smooth muscle is relatively negligible neither producing contraction as does morphine nor relaxation as does meperidine. In contrast to meperidine methadone has a satisfactory antitussive action though not as effective as dihydrocodeinone bitartrate or codeine itself.

Dose for dose methadone is more potent than meperidine but it has proportionately greater toxicity. In general it may be assumed that 5 mg of methadone compares with 50 mg of meperidine whether given orally or parenterally. Like meperidine methadone is not available for intravenous injection.

2 For cutaneous moniliasis (p 3301) apply 1 to 2% gentian violet in 70% alcohol every six to twelve hours Onychia and paronychia require 3% solutions with soakings thrice daily in 1:4000 potassium permanganate During therapy order patients to keep hands out of dish water particularly

3 Mucosal moniliasis occurs orally (thrush perleche) and vaginally For the former (p 503) use alkaline mouth washes paintings of 1% gentian violet gargles of 1:1000 gentian violet and applications of 20% sodium caprylate (adjusted to pH 7.4) thrice daily

4 Vaginal moniliasis (p 2598) is resistant to therapy unless measures of general hygiene are followed the patient avoids soiling of vulva with feces wiping anus from before backward rather than forward the husband submits to applications of 2% gentian violet to penis and foreskin and must agree to circumcision if necessary

Locally the vagina is painted with 1% aqueous or glycerine extract of gentian violet thrice daily If unsuccessful 10% jelly of sodium caprylate (p 4592) 3% ricinoleic acid in tragacanth casea jelly and allantoin vaginal cream (p 4592) are tried

5 For systemic moniliasis successful treatment of meningitis has been reported with streptomycin using 0.5 gm intramuscularly every four hours and 25 to 50 mg intrathecally once daily Despite this success in a single instance the Council on Pharmacy and Chemistry of the American Medical Association 1947 is unimpressed and avers additionally that penicillin and sulfonamides are useless

6 Bronchomoniliasis or thrasher's lung appears to respond to oral doses of potassium iodide (p 4377) inhalations of ethyl iodide (p 4378) and injections of hyperimmune rabbit serum

MORAX AXENFELD CONJUNCTIVITIS

[Angular Conjunctivitis]

General Principles of Diagnosis and Therapy

1 The diplobacillus responsible for Morax Axenfeld conjunctivitis is sensitive to aureomycin

2 For local application use 3% ointment of aureomycin hydrochloride on conjunctivas and lids Every two hours instill 2 to 4 drops of aureomycin ophthalmic solution prepared by adding 5 cc of diluent (supplied by manufacturer) to vial containing 25 mg of antibiotic This solution remains stable for two days if kept in the refrigerator

3 Alternatively instill solutions of 0.05 to 0.5% zinc sulfate Zinc salts inhibit proteolytic ferment secreted by the organism

4 If there are systemic manifestations or the infection appears resistant and productive of local damage of more than mild severity supplement with oral doses of aureomycin or chloramphenicol giving 50 mg per kilogram of body weight per day (2 capsules each of 250 mg every six hours)

7 For pre anesthetic medication we prefer meperidine to methadone. The former has sedative effect the latter none.

8 For concurrent relief of pain and muscle spasm there is no present rival to meperidine. Methadone is indifferent in its action on smooth muscle. Older morphine derivatives and substitutes increase spasm with resultant constipation, retention of urine and increased difficulty in spastic conditions such as pregnancy, bronchial asthma and colics. The single exception to this is papaverine used in much larger than recommended doses (60 to 120 mg).

9 For comparative addiction liability score morphine and dihydromorphinone hydrochloride (dilaudid) highest at 8, metopon at 7, meperidine hydrochloride (demerol), methadone hydrochloride (adanon, methadone and dolophine) next at 5 and codeine least at 3 (Lobel et al. JAMA 138 1025 1948).

10 For comparative analgesic efficacy of single doses rate metopon (6 mg) as most efficacious followed by morphine (10 mg), meperidine, demerol (100 mg), methadone (5 to 10 mg) and codeine (30 mg).

11 For comparative sedation of single doses rate morphine first followed by meperidine, metopon, methadone and codeine (Lobel et al. loc cit).

12 For the comparative duration of analgesic action in hours rate methadone first with a span of four to ten hours, morphine, metopon and codeine next with four hours and meperidine last with three hours using doses above mentioned.

MUMPS

[Epidemic Parotitis]

General Principles of Diagnosis and Treatment

1 In infancy and childhood mumps is usually confined to inflammation of the parotid glands (p. 480). In the adult however the concept of simple epidemic parotitis is far too limited. In Eagle's experience epididymo-orchitis occurred in 25 per cent, meningoencephalitis in 2.6 per cent, presternal edema in 1.2 per cent and three instances each of pancreatitis and myocarditis were observed in 1664 adult patients. When routine lumbar punctures were made Brown and associates (A J Med Sci 215 440 1948) found a pleocytosis in 34 per cent although only 8 per cent had clinical evidences of meningeal irritation.

2 These complications together with increasing recognition that mumps meningoencephalitis may occur without patent parotitis has led to increasing efforts to prevent the disease and provide active treatment once complications have developed.

3 The diagnosis of mumps is usually obvious. Where there is doubt antigen is available for skin testing and complement fixation reactions may be done on serum.

OPIUM DERIVATIVES AND SYNTHETIC SUBSTITUTES

| Product | Available Preparations |
|------------------------------------|---|
| Adanon (Winthrop) | See Methadone N N R. |
| Amidone | Previous brand name for Methadone |
| An 148 | Previous brand name for Methadone |
| Demerol (Winthrop) | See Meperidine Hydrochloride N N R |
| Diaminon | Previous brand name for Methadone |
| Dihydrocodeinone Bitartrate N N R. | Tablets 5 mg Syrup 1 cc = 1 mg <i>Mercodinone (Merrell) hycodan bitartrate (Endo) and Dico did (Bilhuber)</i> Probably the most useful antitussive remedy |
| Dolantin | Previous brand name for Meperidine |
| Dolophine (Lilly) | See Methadone N N R |
| Hycodan Bitartrate (Endo) | See Dihydrocodeinone Bitartrate N N R |
| IG 10820 | German identification of methadone |
| Isonupercaine | See Meperidine Hydrochloride |
| Meperidine Hydrochloride N N R | Oral tablets 50 mg |
| (Isonupercaine Demerol) Winthrop | Hypodermic tablets 50 and 100 mg Ampuls 1 cc = 50 mg Vials for hypodermic use containing 30 cc of which 1 cc = 50 mg Elixir 1 cc = 25 mg See also p 4415 |
| Mercodinone (Merrell) | See Dihydrocodeinone |
| Methadone Hydrochloride N N R | Oral tablets 2.5—5—7.5— and 10 mg Elixir 1 cc = 1 mg Syrup 30 cc = 10 mg Ampuls for hypodermic use 1 cc = 5—10 mg Marketed as methadone (Abbott Massengill) adanon (Winthrop) and dolophine (Lilly) A synthetic which with meperidine is the preparation of choice for oral and parenteral analgesia See p 4415 |
| Methyl Dihydromorphine | See Melopon |
| Metopon | Capsules of 3 mg For investigational use only as oral analgesic in self treatment of pain of malignancy Very similar to dihydromorphinone or dilaudid N N R. (p 3855) |
| Miodine | Previous brand name for methadone |
| Pethidine | Previous brand name for meperidine hydrochloride (Demerol) |

4 *Metopon* is a preparation of methyl dihydromorphinone Originally introduced for investigational use only as an oral analgesic for self treatment of intractable pain in malignancy metopon has no significant advantage over meperidine or methadone

5 Our personal choices for antitussive action are dihydrocodeinone bitartrate methadone and codeine in that order

6 Our personal preferences for oral analgesia are meperidine for nocturnal pain and meperidine or methadone for diurnal pain For subcutaneous injection we have the same preferences for intravenous use we employ dihydromorphinone hydrochloride (dilaudid Bilhuber) or morphine sulfate itself

The accompanying chart is intended for clarification of the pharmacology of muscle since correct use of muscle relaxant drugs is of symptomatic value in conditions as varied as hypertension traumatic and diseased conditions of peripheral vessels migraine asthma intestinal biliary and urinary colics thrombophlebitis frostbite Raynaud's disease the tremors of parkinsonism multiple sclerosis hepatolenticular degeneration and arteriosclerosis convulsions of all types and muscle pain in tetanus polyomyelitis and rabies

For direct action on smooth muscle the practitioner has at his disposal nitrites and thiocyanates each of which has serious side effects that all but nullify their usefulness for inhibition of autonomic stimulants depending on motor innervation there are available adrenergic and atropine like drugs which depress or paralyze nerve endings of the craniosacral division of the involuntary nervous system for stimulation of autonomic inhibitors the patient may be given adrenergics such as epinephrine to relax bronchospasm as in asthma or cholinergics such as neostigmine to alleviate spasm and tremors in cerebral palsy

MUSCLE RELAXANTS

Adrenalin

Commercial brand of epinephrine (p 3877) Useful only in relaxing smooth muscle innervated by the thoracolumbar division of the involuntary nervous system as particularly seen in bronchial asthma (p 2101)

Adrenergics

Useful only in relaxing smooth muscle innervated by the thoracolumbar division of the involuntary nervous system (p 3877)

Adrenolytics

See sympatholytics

Amphetamine

Marketed as benzedrine an adrenergic (p 3882)

Anticholinergics

Somewhat useful in the treatment of tremors of striated muscle (p 2882) May supplement more potent preparations such as artane

Artane

Commercial brand (Lederle) of trihexyphenidyl marketed in tablets of 2 and 5 mg Artane is useful in the treatment of involuntary tremors of the extremities and in muscle spasticity particularly as seen in parkinsonism (p 1505) Give 2 mg after meals and a fourth dose at bedtime if necessary Increase to 5 mg if needed, provided that side effects of nausea or blurring of vision do not occur

Atropine

Used with other depressants of the cholinergic system to relieve muscle tremors and spasticity as in parkinsonism (p 3875) Side effects of dryness of mouth and pupillary dilatation add to patient-discomfort

Banthine

Powerful new anticholinergic particularly valuable in peptic ulcer

4 At least two efforts at vaccine therapy (a formalized mumps vaccine and a vaccine of attenuated virus) have been attempted without signal success. Neither effort has been sufficiently successful to warrant widespread or commercial introduction.

5 Specific therapy for prevention and treatment of complications also has lagged. Neither human convalescent serum nor gamma globulin obtained from normals accomplished much in the way of prophylaxis or therapy. However, gamma globulin derived from human volunteer convalescents and given in intramuscular injections of 20 cc has considerable promise. This amount is the equivalent of 200 cc of normal gamma globulin and 400 cc of human convalescent serum.

6 Prevention and treatment of orchitis and oophoritis also have been attempted with hormonal therapy. Oral administration of diethylstilbestrol in doses of 5 mg daily for three to five days in the male has been suggested. By this means the incidence of orchitis in the adult was reduced from 20 per cent to less than 4 per cent. Evaluation of hormonal therapy in the female offers greater difficulties but it is suggested that it be carried out with larger doses of testosterone (25 mg daily for three to five days).

7 Of antibiotics, sulfonamide and penicillin are without value. Chloramphenicol and aureomycin, however, merit trial since they have proven useful in other virus infections.

Practical Management

1 Institute measures for care of the infected patient (p. 64).

2 For the male, order 5 mg diethylstilbestrol daily for three to five days; for the female, 25 mg testosterone propionate daily for three to five days.

3 If gamma globulin can be obtained from recently convalescent human volunteers, deposit 20 cc intramuscularly.

4 For severe or complicated infections, prescribe aureomycin or chloramphenicol in doses of 50 mg per kilogram of body weight per day (3.5 gm for average adult weighing 150 pounds).

MUSCLE RELAXANTS

The pharmacology of muscle is as complicated as it is important. The practitioner is required to differentiate between striated and smooth muscles since each responds differently to drugs; additionally, some smooth muscles receive motor innervation from the cranio-sacral division of the involuntary nervous system while others are encouraged to contract through the thoracolumbar division. The situation with striated muscles is even more difficult since these structures are innervated both by voluntary and involuntary nervous systems. In consequence, muscle relaxation may be accomplished by drugs that act directly on muscle by inhibitors of autonomic stimulants and by depressors of autonomic inhibitors.

MUSCLE RELAXANTS (Continued)

Cholinergics

Despite enthusiastic introduction, of negligible value in relief of spasticity and tremor of cerebral palsy

Cholinergen Depressants

See atropine etc (p 3875)

Chondrodendron Tomentosum Extract Purified N.N.R.

An aqueous preparation containing the therapeutically effective constituents of crude curare and marketed as d-tubocurarine chloride (Abbott, Squibb) and intocostrin (Squibb). Curare an arrow poison, blocks myoneural transmission to skeletal muscle in therapeutic doses in larger doses it may depress ganglionic transmission in the involuntary nervous system. Unfortunately preparations of curare are also toxic and may produce hazy vision, difficulty in talking and swallowing weakness of eye muscles jaw neck and leg muscles followed by ptosis relaxation of the muscles of the neck spine legs and abdomen terminal paralysis of the diaphragm, and cessation of respiration. Physostigmine and neostigmine are pharmacological antidotes and must be held available any time that a curare preparation is injected. Curare is distinctly a specialist drug. It may be used, under institutional conditions when means for artificial respiration and maintenance of the airway are at hand, for supplementation in anesthesia to diminish the violence of convulsions in shock therapy and to diminish muscle spasm and pain in poliomyelitis and tetanus. For the practitioner less toxic spasmolytics (tolserol, caramiphen and artane) are preferable.

Curare

See purified chondrodendron tomentosum extract above

Dibenamine

Dibenamine one of the first isolated adrenolytics, has the formula *N,N*-dibenzyl β -chloroethylamine. Dibenamine is not commercially available but may prove of later value since the effects of a single injection persist for thirty six to ninety six hours. Resting blood pressures and cardiac rates fall in early and moderately advanced essential hypertension but not in patients in malignant phases of the disease or in those who are normotensive. Unfortunately dibenamine produces a transient repetitive temporal hallucination or reduplicated paramnesia with the phenomenon of *deja vu* (p 1299).

Dihydroergotamine or Dihydroergocornine

A potent sympatholytic agent commercially available in ampuls containing 1 cc (Sandoz). For use in prevention and treatment of migraine and for non obstetrical indications particularly reduction of essential hypertension. Introduce subcutaneously or intramuscularly in doses of 1 to 2 cc provided that side reactions are not encountered (nausea vomiting muscular weakness angiospasm, etc.)

d-Tubocurarine

See Chondrodendron Tomentosum

Epinephrine

The first and most powerful adrenergic or sympathomimetic preparation (p 3877). Useful only in relaxing smooth muscle spasm when there is motor innervation by the thoracolumbar division of the involuntary nervous system, as in asthma.

Ergotamine

See cafergones above

MUSCLE RELAXANTS (Continued)

Benodaine

Benodaine hydrochloride (Merck) is supplied in 10 cc ampuls each of which contains 20 mg of the drug (0.2% solution in saline). Commercial benodaine is 2 (1 piperidylmethyl) 1,4-benzodioxane hydrochloride. Benodaine is an adrenolytic, decreasing and then abolishing the action of epinephrine on blood pressure. Currently it is used solely to make the diagnosis of hypertension due to epinephrine producing tumors of the adrenal medulla (pheochromocytomas) and of extra-adrenal chromatin tissues (paragangliomas). Injected intravenously into the patient suffering from either of these tumors there is a brief but dramatic decrease in blood pressure which does not occur in hypertension due to any other cause. Since untoward effects with intravenous benodaine may be very serious (tachycardia, flushing, palpitation, nervousness, hyperpnea, headache, dizziness, substernal pressure and precordial distress) the technic of injection requires scrutiny under institutional conditions. Determine surface area of the body from basal metabolism chart. Inject intravenously 10 mg of benodaine per square meter of body surface (average dose for adult weighing 150 lbs equals 15 to 20 mg or 7.5 to 10 cc of commercially available 0.2% solution). The patient is required to be supine throughout injection and for a period of at least a half hour thereafter. Because of toxic reactions it is best to give the drug well diluted in an intravenous drip slowly introduced. A positive response consists in a significant fall in blood pressure that occurs within a few moments with a return to pre-injection level in about fifteen minutes. Except in the presence of the epinephrine-producing tumor the blood pressure is unaffected or shows a transitory rise.

Benzazoline Hydrochloride

Commercially available as priscol (Ciba)

Benzedrine

Brand of amphetamine, a sympathomimetic preparation or adrenergic (p. 3882)

Cafergone

An extremely useful commercial preparation. Each tablet contains 1 mg of ergotamine tartrate and 100 mg of caffeine. Ergotamine is a sympatholytic preparation of almost specific value in the treatment of migraine (p. 1508). In synergistic combination with caffeine, ergotamine appears to be as useful when given orally as when injected. Hence it has great practical value for self-treatment of attacks. Suggest an average initial dose of 2 tablets at onset of symptoms. Give an additional dose at 30 minute intervals until a total of 6 has been ingested unless relief occurs sooner. Ergotamine and allied preparations are contraindicated in the presence of peripheral vascular disease and impaired renal or hepatic function and pregnancy.

Caramiphen Hydrochloride

Spasmolytic synthetic available commercially as parpanit (parpanit) marked in sugar coated tablets containing 12.5-50 mg (Geigy). Chemically caramiphen is diethylaminoethyl 1-phenylcyclopentane-1-carboxylate hydrochloride. It appears to block proprioceptive impulses arising in muscles and joints thus diminishing intensity of reflexes that produce muscle rigidity in parkinsonian syndrome (p. 1503). Treatment is inaugurated with 12.5 mg 5 times daily. The daily dose is increased gradually to tolerance up to 90 to 600 mg with an average of 200 to 400 mg. Toxic manifestations include dizziness, weakness, dryness of mouth, blurring of vision and diplopia. In the hands of objective investigators, caramiphen gave subjective improvement in approximately half of the patients with parkinsonism as well as others with idiopathic and arteriosclerotic tremors, dystonia and hepatolenticular degeneration (Sciarrà et al. JAMA 141:1226, 1949). Unfortunately initial subjective improvement did not persist and the final evaluation of caramiphen was disappointing with prolongation of improvement in only 7 per cent, offset by 86 per cent with untoward side effects.

MUSCLE RELAXANTS (Continued)

Cholinergics

De pite enthusiastic introduction of negligible value in relief of spasticity and tremor of cerebral palsy

Cholinergic Depressants

See atropine etc (p 3875)

Chondrodendron Tomentosum Extract Purified N N R.

An aqueous preparation containing the therapeutically effective constituents of crude curare and marketed as d-tubocurarine chloride (Abbott Squibb) and intocostin (Squibb). Curare an arrow poison blocks myoneural transmission to skeletal muscle in therapeutic doses in larger doses it may depress ganglionic transmission in the involuntary nervous system. Unfortunately preparations of curare are also toxic and may produce hazy vision difficulty in talking and swallowing weakness of eye muscles jaw neck and leg muscles followed by ptosis relaxation of the muscles of the neck spine legs and abdomen terminal paralysis of the diaphragm and cessation of respiration. Physostigmine and neostigmine are pharmacological antidotes and must be held available any time that a curare preparation is injected. Curare is distinctly a specialist drug. It may be used under institutional conditions when means for artificial respiration and maintenance of the airway are at hand, for supplementation in anesthesia to diminish the violence of convulsions in shock therapy and to diminish muscle spasm and pain in poliomyelitis and tetanus. For the practitioner less toxic spasmolytics (tolserol caramiphen and ariane) are preferable.

Curare

See purified chondrodendron tomentosum extract above

Dibenzamine

Dibenzamine one of the first isolated adrenolytics has the formula $\text{NN dibenzyl } \beta\text{-chloroethylamine}$. Dibenzamine is not commercially available but may prove of later value since the effects of a single injection persist for thirty six to ninety six hours. Resting blood pressures and cardiac rates fall in early and moderately advanced essential hypertension but not in patients in malignant phases of the disease or in those who are normotensive. Unfortunately dibenzamine produces a transient repetitive temporal hallucination or reduplicated paramnesia with the phenomenon of *deja vu* (p 1299).

Dihydroergotamine or Dihydroergocornine

A potent sympatholytic agent commercially available in ampuls containing 1 cc (Sandoz). For use in prevention and treatment of migraine and for non obstetrical indications particularly reduction of essential hypertension. Introduce subcutaneously or intramuscularly in doses of 1 to 2 cc provided that side reactions are not encountered (nausea vomiting muscular weakness angiospasm et c).

d-Tubocurarine

See Chondrodendron Tomentosum

Epinephrine

The first and most powerful adrenergic or sympathomimetic preparation (p 3877). Useful only in relaxing smooth muscle spasm when there is motor innervation by the thoracolumbar division of the involuntary nervous system as in asthma.

Ergotamine

See cafergones above

MUSCLE RELAXANTS (Continued)

Etamon

A commercial preparation of tetraethylammonium chloride (Parke Davis) marketed in 20 cc vials of which each cc contains 100 mg. The average dose injected intramuscularly is 10 to 12 cc not to exceed a total dose of 20 mg per kilogram of body weight (14 cc for average adult weighing 150 lbs). Intravenously smaller doses are advised approximating 1 to 5 cc but not exceeding 7 mg per kilogram of body weight (11 cc for average adult weighing 150 lbs). Etamon blocks nerve impulses of autonomic ganglia including both sympathetic and parasympathetic impulses. Clinically the action of the drug may be compared to an extensive non surgical sympathectomy. Following parenteral injection there is an abrupt fall in both systolic and diastolic blood pressures with an increase in peripheral blood flow. Simultaneously gastric secretion is reduced gastric motility is increased and there may be retention of urine in the bladder due to spasm of the sphincter. The pupils dilate accommodation is lost and the patient complains of drowsiness and an acid metallic taste of the mouth with peculiar hyperesthesia over the entire body (sensations of pins and needles). The fall of blood pressure lasts fifteen minutes and there is a return to normal within twenty minutes though the patient may still note postural hypotension. Clinically etamon has been used to provide an autonomic blockade in thromboangitis obliterans lymphedema frostbite and traumatic conditions of the extremities in which the circulation is impaired. At least one fatal experience with 230 mg of etamon has been observed.

Gynergen

See cafergone

Intocostrin

See chondrodendron tomentosum extract above

Isonorin

A sympathomimetic amine particularly valuable when taken orally or by inhalation in bronchial asthma (p 4270)

Isuprel

Same as above

Lassephen

Abbott brand of tolserol described below

Mephesisin

Abbott brand of tolserol described below

Myanesin

English brand name for tolserol described below

Neostigmine

See cholinergics

Nitrites

Transitory relaxation of smooth muscle by direct action without neurogenic intervention. Useful for transitory effects in angina (p 3892)

Oranixon

A synthetic with the chemical formula 3-ortho toloxy 1,2 propanediol. Marketed in compressed tablets of 250 mg and an elixir of which one teaspoonful contains 400 mg (Organon). 4 to 5 tablets daily or 1 to 3 teaspoonfuls of elixir given three or four times daily promote muscular relaxation, relieve spasm of voluntary muscle and produce some analgesia. Oranixon has been used for control of muscle spasm in parkinsonism (p 1506) hemiplegia and cerebral diplegia.

MUSCLE RELAXANTS (*Continued*)

Panparmit (Parpanit)

See caramiphen above

Priscol

Priscol (benzazoline hydrochloride) is an adrenolytic and sympatholytic agent, marketed in tablets each of which contains 25 mg (Ciba). The dose is 1-2 tablets taken 5-6 times daily unless untoward manifestations develop. Priscol has been used to produce vasodilatation and relieve angiospasm in intermittent claudication, thromboangitis obliterans, thrombophlebitis, frostbite and Raynaud's disease. Large doses produce transitory faintness or syncope with orthostatic hypotension. Untoward manifestations may be relieved by use of a sympathomimetic such as epinephrine or amphetamine.

Scopolamine

An atropine like preparation useful in control of tremor in parkinsonism (p 3875). Side reactions similar to atropine with additional amnesia and other disturbances of cerebration. Yields preference to artane, caramiphen and tolserol.

Sympatholysins

Sympatholysins or adrenolysins block the action of sympathomimetic preparations such as epinephrine. Though Council approval has been given to none of presently available sympatholysins, benodanine, dibenamine, etamon and priscol are available for experimental use or commercial purchase as elsewhere described in this chart.

Sympathomimetic Amines

Preparations with epinephrine like action as described above (p 3872).

Tea

See etamon.

Tetraethylammonium Chloride

See etamon.

Thiocyanate

Advocated for direct depression of smooth muscle particularly in the treatment of hypertension. Commercially available in tablets containing 65 and 200 mg and as a 4% elixir. Currently there is general agreement with the previous statement that experiences with the drug have been most disappointing and under no circumstances would seem sufficiently promising to hazard the toxic symptoms that apparently occur in one patient in 100 and which include weakness, fatigue, muscle pains, aphasia, confusion, mania, delirium, collapse, coma and death. (p 3896)

Tolserol

A synthetic reducing abnormal neuromuscular mechanism originating in mid brain, brain stem or cord lessening exaggerated reflexes and allaying spasticity. Chemically tolserol is 3-ortho-toloxyl 1-propanediol. It is marketed in England as myanesin. In America tolserol is commercially available in tablets containing 250 mg and as an elixir compounded so that 1 cc = 100 mg (Squibb). The suggested doses are 4 to 7 tablets taken 3 times daily or 6 to 10 teaspoonfuls of elixir 3 times daily. Except for some drowsiness, untoward side effects have not been observed. In therapeutic doses tolserol relieves involuntary movements, rigidity, spasticity and tremor. It has been employed in tetanus, poliomyelitis, parkinsonism, hemiplegia, cerebral palsy, multiple sclerosis and in choreiform and athetotic disturbances. Lusephen (Mephensesin) Abbott is identical with tolserol.

Trihexyphenidyl

See artane above

MUSCLE RELAXANTS (Continued)

Tubocurarine

See chondrodendron tomentosum

Veratrum Viride

Once widely employed as a specific in the reduction of hypertension then discarded as ineffectual and toxic veratrum viride is currently being revived for symptomatic management of hypertension. The commercially available preparation Veratavis (Irwin Neisler) has been standardized by the Crow unit based on the amount of reference standard veratrum viride necessary to cause cardiac arrest in daphnia magna the test animal. Tablets are available containing 5 or 10 Crow units. Using 1 to 2 tablets orally a hypotensive effect occurs within one to two hours with a maximum in four to six hours and disappearance of effect in approximately fourteen hours. Laboratory studies reveal that cardiac output is moderately increased and there is an associated reduction in pulmonary arterial pressure.

MUSHROOM POISONING

General Principles of Diagnosis and Therapy

1 Mushroom poisoning is due to ingestion of the alkaloid muscarine derived from *Amanita phalloides* (toadstool) and *Amanita muscaria* (fly mushroom). With the latter profuse perspiration, salivation and lacrimation occur early followed by gastro intestinal symptoms of lesser severity than with toadstool poisoning.

2 Mushroom poisoning is heralded by acute abdominal pain, vomiting and diarrhea. Soon blood is observed in stools and vomitus shortly followed by extreme prostration and generalized weakness. Symptoms may persist for two hours or six days followed by complete recovery or death from acute nephritis, hepatitis, circulatory failure or coma.

3 Therapeutic efforts are limited to gastric lavage with normal saline followed by introduction of 2 ounces (60 cc) of 50% magnesium sulfate through the stomach tube. The pharmacological antidote for muscarine is atropine sulfate injecting 0.6 to 1.5 mg every four hours.

MUSSEL (SHELLFISH) POISONING

General Principles of Diagnosis and Therapy

1 At times ingestion of mussels produces poisoning due to the presence of large numbers of small dinoflagellates.

2 Soon after the meal patients note tingling and numbness or prickling around the lips followed within ten minutes by paresthesias, paralysis, ataxia and mental aberrations. Only occasionally do patients have gastro intestinal symptoms such as vomiting and pain. Death may occur quickly through respiratory failure but if the patient survives twelve hours the prognosis is excellent.

3 Therapeutic efforts are limited to evacuation of the gastro intestinal tract by lavage or emetics and purging with a saline laxative

4 Boiling mussels for thirty minutes with 1 ounce of bicarbonate of soda to each quart of water prevents shell food poisoning

MYASTHENIA GRAVIS

Principles of Diagnosis and Therapy

1 Myasthenia gravis is characterized by undue fatigue of voluntary muscles after exercise restitution to normal after a short rest absence of muscular atrophy mild symptoms before noon time as compared with afternoon and evening variable clinical course normal neurological examination and symptoms which most frequently consist of ptosis strabismus and diplopia (p 2886)

2 The specific diagnosis is manifest when intramuscular injection of 15 mg of neostigmine methylsulfate gives immediate relief and when manifestations are worsened when quinine is prescribed (Table 152 p 2887)

3 The probable pathogenesis of myasthenia gravis is imbalance in the acetylcholine cholinesterase reaction so that acetylcholine is prevented from exerting its normal effect

4 In mild instances myasthenia gravis is controlled with oral or intramuscular administration of neostigmine

■ In cases of greater severity and in those who fail to obtain complete relief from neostigmine tetra ethylpyrophosphate (TEPP) may be given orally A 1% solution is prepared in anhydrous propylene glycol and placed in a 20 cc dark glass vial that is tightly capped and waxed The usual therapeutic dose of this anticholinesterase substance is 13 to 17 mg per day in 2 or 3 divided doses

6 Anticholinesterase substances given therapeutically in myasthenia gravis may produce toxic manifestations including muscle fasciculation spasm of accommodation miosis abdominal cramps diarrhea lacrimation perspiration salivation nausea vomiting restlessness and bradycardia Each of these is relieved by 1 mg ($\frac{1}{60}$ grain) atropine the pharmacologic antidote

7 When available cortisone and ACTH merit trial Suggestively favorable results have been obtained in a few reported instances

8 With failure of medical treatment look for evidences of thymic enlargement and consider thymectomy Of eight patients subjected to this procedure two were considerably improved four moderately improved one slightly improved and one patient died Of the total of 129 patients reported in the literature 52 per cent seemed to have done well

MYCOSES

[See Fungus Infections]

MYELOMA, MULTIPLE

[See Blood and Blood forming Organs Neoplasms of]

NEOPLASM

The problem of malignancy in neoplasms is the most formidable challenge that currently confronts medical science. The urgent need for solution is best indicated by statistical surveys which estimate that there are approximately 800 000 cancer sufferers at any given time in the United States with 185 000 annual deaths.

Historically the status of the cancer problem is comparable to that of infectious disease before the time of Pasteur when contagion was attributed to humours or vapours and when the practitioner contributed so little to the survival of his patient that there developed a school of therapeutic nihilists including such great figures as Virchow the pathologist. Technologically however the picture is brighter particularly since the forces of medicine and its allied sciences have been mobilized to fight on a common front using weapons of the potential of radioactivity and products of atomic fission.

Etiology

Until the cause or causes of malignancy are discovered the development of specific diagnostic tests and curative therapeutic measures appears unlikely. Currently the problem of etiology in cancer is confused not by lack of knowledge of carcinogens but by the numbers and varieties of potential causes. In the study of cancer investigation has disclosed a gamut of etiologic agents and influences including energy agents such as x rays radioactive substances ultraviolet rays and heat more than 300 chemical compounds viruses parasites (which may be vectors for viruses) endocrine and dietary manipulations and multiple genetic factors (Scheele Bulletin of the New York Academy of Medicine November 1949 p 676).

Early Signs of Cancer

The seasoned general practitioner knows to his dismay and chagrin that the malignant neoplasm is insidious for a considerable span of time. Except in those instances in which the lesion is visible to the naked eye (skin or mucous surfaces) accessible to x ray examination (pleura and lungs) or readily palpable by the examining finger (breast and prostate and male and female genitals) the diagnosis of malignancy usually is delayed until advent of complications.

For the most part the so-called early signs of malignancy are not caused by the growth itself but by superimposed ulceration infiltration hemorrhage mechanical pressure or obstruction or by development of constitutional disturbances (loss of weight and strength or anemia) or detection of metastases. Symptomatic malignancy to which attention is drawn by its complications rather than its intrinsic characteristics is already more than considerably advanced and in consequence less amenable to radical and potentially curative therapy. More than any other factor delay in diagnosis is responsible for the fact that only 20 per cent of persons with malignancy are salvaged for five years.

Cancer Detection by the General Practitioner

It is our opinion and in accordance with our experience that cancer detection in the asymptomatic phase of malignancy is best and most unobtrusively accomplished by supplementing routine history and physical examination by a battery of tests most of which are within the scope of the complete practitioner and his office laboratory. The remainder may be referred without fear inspiring comment to the consulting serologist histopathologist roentgenologist surgeon or indicated specialist.

Routine History and Physical Survey

The necessity for obtaining a complete history on every new patient, at the initial examination cannot be too often repeated (p 3469). Nor can the admonition to perform a complete physical examination (p 3476) following recital of the history be stressed too often and with too great emphasis.

For many years it has been our custom to re-check the history and particularly the Pattern of the Way of Life (p 3472) and re-assess the physical status of each patient whenever the opportunity arose since only a limited portion of the population realizes the importance of annual and preferably semi-annual personal surveys.

Health examinations are naturally not limited by the seasoned practitioner to cancer detection alone since asymptomatic phases of many other disturbances notably metabolic and circulatory simultaneously may be brought to light. Nevertheless a principal object of the physical survey is that of cancer detection in the asymptomatic phase of malignancy. For accomplishment of this purpose the details tabulated on p 4428 merit thoughtful consideration. The left hand column of this "blueprint" lists structures under scrutiny with references to normal characteristics and methods for determination of these qualities; the right hand column refers to Tables of Differential Diagnosis based on deviations from the norm.

CANCER DETECTION

The Practitioner's Physical Survey in the Asymptomatic Phase of Malignancy

| Anatomical Structure or Zone | Differential Diagnosis of Objective Findings |
|---------------------------------------|--|
| Weight (p 3481) | Loss of weight (p 700) |
| Skin (p 3498) | Nodules cysts and tumors (p 3210) |
| | Fissures cracks clefts rhagades and ulcers (p 3218) |
| | Dermatoses of the aged (p 3214) |
| Cranium (p 3503) | Disturbances of the head in adults (p 3504) |
| Face (p 3508) | Dermatoses of face (p 3266) |
| Nose (p 3588) | Dermatoses of nose (p 2110) |
| | Internal abnormalities of nose (p 3590) |
| Lips (p 3595) | Disturbances of lips (p 1685) |
| Mouth (p 3595) | Enanthemas involving oral and buccal surfaces (p 1668) |
| | Disturbances of tongue (p 1687) |
| | Disturbances of gums (p 1701) |
| | Disturbances of jaw (p 1705) |
| | Oral pharyngeal cysts (Table 120 p 1714) |
| | Disturbances of palate (p 1716) |
| | Visible abnormalities of throat (p 3600) |
| Larynx (p 3604) | Abnormalities of larynx observed by endoscopy (p 3606) |
| Neck (p 3509) | Abnormalities of neck (p 3510) |
| | Cervical lymphadenopathy (p 3518) |
| | Swellings and tumors of neck (p 3514) |
| Trachea (p 3512) | Disturbances of trachea deviation and compression (p 3512) |
| Thyroid (p 3513) | Swellings and tumors of neck (p 3514) |
| Parathyroids (p 3515) | Swellings and tumors of neck (p 3514) |
| Carotid body (p 3515) | Swellings and tumors of neck (p 3514) |
| Salivary glands (p 3518) | Disturbances of salivary glands (p 3517) |
| Cervical lymph nodes (p 3519) | Cervical lymphadenopathy (p 3518) |
| Thorax (p 3522) | Visible abnormalities of chest wall (p 3523) |
| | Clinical disturbances of breast and nipples (p 2578) |
| | Axillary lymphadenopathy (p 3525) |
| | Abnormal movements and pulsations of thoracic cage (p 3528) |
| | Abnormalities of chest wall noted on palpation (p 3534) |
| | Abnormalities noted by percussion of chest wall (p 3538) |
| | Abnormalities noted by auscultation of chest wall (p 3542) |
| Abdominal wall and cavity (p 3552) | Disturbances of abdominal wall (p 3556) |
| | Generalized abdominal swellings and tumors (p 1750) |
| | Swellings and tumors of right upper quadrant (p 1957) |
| | Swellings and tumors of left upper quadrant (p 1849) |
| | Swellings and tumors of right lower quadrant (p 1886) |
| | Swellings and tumors of left lower quadrant (p 1870) |
| | Swellings and tumors of epigastrium (p 1814) |
| | Swellings and tumors of hypogastrium (p 2621) |
| | Enlargements of liver (p 1973) |
| | Enlargement of kidney (p 2230) |
| | Splenomegaly (p 1129) |
| | Swellings of back (p 2822) |
| | Disturbances of ossification (p 2798) |
| | Monarthralgia (p 2803) |
| | Increased radiotranslucency of bone (decalcification) (p 2806) |
| | Painless swellings and deformities involving hips thighs calves and legs (p 2826) |
| | Swellings of bone (p 2844) |
| | Painless swellings and deformities of shoulders and upper extremities (p 2954) |
| | Inguinal swellings and tumors (p 3092) |
| | Inguinal lymphadenopathy (p 3092) |

CANCER DETECTION (Continued)

The Practitioner's Physical Survey in the Asymptomatic Phase of Malignancy

| Anatomical Structure or Zone | Differential Diagnosis of Objective Findings |
|--|--|
| Male perineum and genitals (p 3634) | Dermatoses of genitals and perineum (p 3274) Swellings and tumors of scrotum and its contents (p 2441) Malignancies of testes (p 2444) Disturbances of penis (p 2453) Rectal examination of anal orifice and prostate (p 3639) |
| Female pelvis perineum and genitals (p 3641) | Dermatoses of genitals and perineum (p 290) Swellings and tumors of hypogastrium (p 2621) Inguinal swellings and tumors (p 3092) Disturbances of perineum vulva and vagina (p 2548) Swellings and tumors of right lower quadrant (p 1886) Swellings and tumors of left lower quadrant (p 1870) Inspection with bivalve speculum (Fig 1067 = 3547) Inspection of cervix of uterus (p 3647) Surface biopsy of cervix by method of Ayer (p 4430) Bimanual examination of internal genitals (Fig 1068 p 3648) |

Cancer Detection in the Office Laboratory

Examinations conducted in the office laboratory are of little value in the detection of asymptomatic malignancy. For the most part abnormalities of urine, stool and blood reveal deviations due to complications. The single exception is the Bolen test which at best is suggestive rather than oracular. In our hands it yields many false positive readings.

The Practitioner's Laboratory Survey for Cancer Detection in the Asymptomatic Phase

| Specimen | Examination | Diagnostic Suggestion |
|----------|---|---|
| Urine | Bence Jones proteinuria (p 3673) Glycosuria (p 3673) Hematuria (p 3683) | Multiple myeloma (p 1035) Malignancy of pancreas (p 1843) or anterior pituitary (p 1175) Tumors of kidney (p 2326) ureter (p 2326) and bladder (p 2322) |
| Stool | Occult blood (p 3728) | Melena and tarry stools (p 1843) |
| Blood | Red cell count (p 3696) White cell count (p 3696) | Anemias (p 1058) Polycythemia (p 1092) Leukocytosis (p 1097) Lymphocytosis (p 1096) Monocytosis (p 1099) |
| | Bolen test Erythrocyte sedimentation rate (p 3707) | Increased in many miscellaneous disturbances |

Technic

1. Clean two glass slides with alcohol. Wipe dry.
2. Clean fingertip with alcohol. Wipe dry. Puncture with Hagedorn needles.
3. Hold the cleaned glass slides horizontal to the finger. With a light touch pick up three separate drops of blood on the back of each slide.
4. When blood has thoroughly dried examine pattern under microscope.
5. The normal pattern (which can be observed by obtaining specimens from members of the office staff) is compact. There are no vacant spaces and red cells are discrete.
6. The cancer pattern shows a sludging of cells, disappearance of fibrin network and large open lakes of plasma. To become familiar with the cancer pattern obtain blood from known carcinomatous individuals and compare with drops obtained from normal controls.

by simpler staining methods (such as Wright) Papanicolaou technic reveals more clearly nuclear anisocytosis anisonucleosis hyperchromatism fragmentation abnormal and bizarre forms conspicuousness and mitoses

Greater skill and experience are required for cytodiagnosis than for any other pathologic technic The practitioner must insist that the report be rendered by one who is specially trained If there is reasonable doubt as to interpretation send slides for another opinion since the gravity of the situation is sufficiently great to demand all possible protection against errors of false negative or false positive

The Papanicolaou method is not oracular It must not be used to the exclusion of curettage or biopsies if these procedures are possible Whenever feasible check the Papanicolaou slide by histologic sections particularly before performance of a major and irreversible procedure such as gastrectomy hysterectomy or pneumonectomy

Marrow Biopsy

Bone marrow is most easily obtained by sternal puncture (p 1042) best performed by the hematologist so that slides may be prepared instantly after removal of the specimen

Surgical Biopsy

For surgical biopsy remove a lymph node or a generous section of the tumor mass itself Unless absolutely essential as in punch biopsies of the liver avoid methods of diagnostic aspiration Blind procedures do not provide satisfactory specimens for the highly important work of the histopathologist If malignancy is suspected the gravity of the lesion requires that no effort be spared to give the specialist every opportunity to render a satisfactory report With histologic specimens this can be done only by providing tissue sufficiently large for careful handling which has not been macerated in its removal

Electrogastrography

The electrogastrogram currently in its experimental phase provides a trace that resembles the electrocardiogram In the hands of its innovators it is the most delicate method for the diagnosis of gastric malignancy and gives positive findings when all other investigations are still unrevealing The technic of electrogastrography has been modified and adapted by Langman for use in the diagnosis of malignancy of the cervix However the accessibility of cervical tissue to surface or exfoliative cytology renders the Langman trace of less value than the electrogastrogram

SPECIALIZED PROCEDURES FOR THE DIAGNOSIS OF MALIGNANCY

Serodiagnosis

Send 15 or 20 cc of clotted blood to clinical pathologist for Black (methylene blue) Huggins or West Hilliard reactions

Exact figures for the evaluation of the Huggins test are not available but it is

Specialized Diagnostic Procedures in Asymptomatic and Symptomatic Malignancy

Without alarming the patient the practitioner obtains specimens for specialized diagnostic procedures to aid in the diagnosis of asymptomatic malignancy. Withdrawal of 15 to 20 cc of clotted blood is all that is required for the trained clinical pathologist or serologist to set up Huggins and Black tests whose implications may be told to the patient after results have been obtained. After withdrawal of blood, again without comment material for surface biopsy of the uterine cervix is obtained during vaginoscopy.

In symptomatic phases of malignancy additional procedures are required. These include simple and contrast roentgenography, blood chemical determinations, aspiration of bone marrow, removal of tissue for biopsy, surgical exploration, electro-diagnosis, and the use of radioactive tracers in special institutions equipped for these refinements.

Surface and Exfoliative Biopsies (Ayer Papanicolaou)

To obtain material for surface biopsy (Ayer) or exfoliative cytology (Papanicolaou) thoroughly dry mucosa and make a cervical smear using a fine bulb syringe or a cotton applicator. Avoid wetting or lubricating vaginal canal since water and oil distort cells and interfere with diagnostic acumen.

Spread material uniformly on a clean glass slide. Dry in air and fix in equal parts of ether and 95% alcohol before sending to pathologist.

Sponge Biopsy (Gladstone)

For sponge biopsy, obtain special set manufactured by Upjohn Company. Obtain clear visualization of lesion, whether on skin, uterine cervix, mouth, rectum or recto sigmoid. Wipe with several cotton sponges before rubbing diagnostic Gelfoam sponge over base of ulcer.

For sponge biopsy of cervix first use larger flat piece over lips of cervix and external os. Then insert second narrower piece into cervical canal for a distance of 0.5 to 1 cm. Place sponges in a small bottle of 10% formalin (provided with set) and send to pathologist.

Button Biopsy

For button biopsy centrifuge specimen and decant supernatant fluid. Treat button of sediment as a histologic section or spread on slide and stain by method of Papanicolaou.

Cytodiagnosis of Malignancy

Earliest changes in malignancy are reflected in the nuclear structure of superficial or exfoliated cells. To delineate these histologic variants with greatest clarity Papanicolaou has devised a complicated staining reaction which renders cytoplasm transparent and brings out nuclear detail in finest intricacy.

While the same changes to a lesser degree may be demonstrated

With the exceptions of androgen in breast malignancy estrogen in prostatic malignancy and a trial of teropterin in miscellaneous metastatic cancers available anticarcinogens are disappointing in their effectiveness or excessively toxic for use by the general practitioner. Notable among ineffectual products is the Russian antitreticular cytotoxic serum. Among hazardous preparations are bacterial filtrates which nevertheless on occasions have produced remarkable clinical improvement at the price of severe febrile and local reactions.

Under pressure the isolated practitioner with a well equipped office laboratory also may use aminopterin and urethane in the treatment of leukemia. Additionally injections of stilbamidine may be tried as a desperation resort in the rarely encountered multiple myeloma provided that risks are understood by some responsible member of the family.

ANTICARCINOGENIC THERAPY AVAILABLE TO THE PRACTITIONER

ACS (Ant Reticular Cytotoxic Serum)

Unpromising report in a variety of neoplasms negative results in mycosis fungoides no evidence of a fundamental effect on the neoplasm in 22 cases of Hodgkin's disease (Gellhorn and Jones Am J Med 6 195 1949)

Aminopterin (4-amino-pteroyl glutamic acid)

A folic acid antagonist used in the treatment of *acute leukemia*. Daily subcutaneous or intramuscular injections of 0.5 to 1.0 mg produce remissions in approximately 50 per cent of children and 30 per cent of adults. Continue therapy until remission unless toxic manifestations appear sooner (severe dermatitis ulceration of intestinal epithelium with hemorrhage pancytopenia with anemia leukopenia thrombocytopenia and alopecia). Also merits trial in Hodgkin's disease lymphosarcomas and neuroblastomas.

Androgen

Intramuscular injections of 100 mg three times weekly for eight to ten weeks in metastatic breast malignancy provide relief of pain and subjective well being. Do not use to exclusion of surgery and irradiation. Preferably employed in conjunction with the latter two or after they have been fully utilized. Consider use in prophylaxis before metastases appear (p 4192).

Anterior Pituitary Corticotrophic Hormone (ACTH)

Anterior pituitary corticotrophic hormone when available may produce remissions in leukemias Hodgkin's disease and malignant lymphomas (p 4146).

Bacterial Filtrates

Mixed toxins of *S. erysipelas* and *B. prodigiosus* (Coley) and filtrates of *S. marcescens* (Brues and Shear) show occasional palliation but with marked systemic reactions often associated with hemorrhage and necrosis of neoplasms. *S. cruzi* endotoxins (KR) though reported to produce a favorable response by the Russians (Klyueva) have been disappointing in the hands of American investigators. Application in human neoplastic disease for the present is hazardous and of doubtful efficacy (Gellhorn and Jones).

Diopterin

Pteroyl Glutamic acid See Teropterin

Ethyl Carbamate

See Urethane

probable that negative results are over 95% accurate and positive results about 80% accurate. False positives occur in patients with pulmonary tuberculosis, chronic nephritis, benign prostatic hypertrophy, lobar pneumonia and pregnancy. There is a possibility that the test is less reliable in older age groups.

Cytodiagnosis

Surface biopsy of normal cervix (Ayer)

Exfoliative biopsy using material from ulcerated cervix, gastric contents, sputum, pleural fluid, peritoneal fluid, urine or scrapings obtained by sigmoidoscopy (Papanicolaou)

Sponge biopsy (Gladstone) : button biopsy using sediment of centrifuged specimen such as pleural or ascitic fluid or urine

X ray

Simple roentgenograms for chest, skull and other bones (Table 196 p 3741)

Contrast roentgenography for digestive, urinary, respiratory or nervous systems or peri renal tissues (Table 197 p 3742)

Blood chemistry (p 3712)

Hyperglycemia in hyperpituitarism and adrenal cortical chromaffinomas (p 773) *Hypoglycemia* in adrenal cortical deficiency, hypopituitarism and hyperinsulinism due to malignancy of the pancreas (p 734)

Hypercalcemia in adenomas of parathyroid and of basophilic tissue of anterior pituitary (p 723) *Elevated acid phosphatase* in prostatic carcinomatosis (p 728)

Hyponatremia in adrenal cortical deficiency (p 729) *Hypernatremia* in basophilic adenomas of anterior pituitary and neoplasms of adrenal cortex (p 730)

Hypopotassemia in adrenocortical hyperfunctioning tumors and hyperpituitarism (p 731)

Hyperglobulinemia and *hyperproteinemia* in multiple myeloma, leukemia and lymphosarcoma (p 735)

Marrow aspiration (p 1042)

For diagnosis of leukemia, polycythemia, multiple myeloma, Hodgkin's disease and metastatic carcinomatosis (Table 68 p 1043)

Surgery

For biopsy or exploration

Electrodiagnosis

With special electrodes obtain graphs from stomach (Goodman) or uterine cervix (Langman)

Radioactive tracers

Uptake of P^{32} for tumors of breast or testes. Also use during surgery for brain tumors

Uptake of P^{31} (diodo fluorescein) for detection of thyroid tumors and of brain tumors before surgery. Refer to institutions provided with radioactive material by the Atomic Energy Commission. And equipped with special apparatus such as Geiger counters, etc.

Anticarcinogenic Therapy by the Practitioner

Effective anticarcinogenic therapy requires radical surgery and/or powerful radiotherapy. Each of these modalities is beyond the scope of the general practitioner who must necessarily use instrumentalities whose technical demands are less exacting.

Anti Carcinogenic Therapy by the Specialist

Radical surgery and irradiation are the principal agents for attempted radical cure of malignancy. Under special circumstances the two therapeutic agencies are combined using irradiation preoperatively and/or postoperatively.

Roentgen therapy may be made less toxic to the host and more destructive to the malignancy by simultaneous administration of aureomycin. Additionally surgical and/or roentgen therapy may be fortified by concurrent hormone therapy including castration in breast and prostate malignancies and injections of gonadal hormone of the opposite sex following castration. Thus the female receives androgen for symptomatic relief and anticarcinogenesis in malignancies of the breast and the male estrogen for similar purpose.

In leukemia and malignant lymphomas including Hodgkin's disease other special tools are available to the expert working in institutions provided with special equipment. Nitrogen mustard, P^{32} , Na^{24} , I^{131} and Au^{198} are under experimental investigation in specially equipped laboratories.

ANTI-CARCINOGENIC MEASURES EMPLOYED BY CONSULTANT SPECIALISTS

Anterior Pituitary Corticotrophic Hormone (ACTH)

Use by special allocation in the treatment of leukemias, Hodgkin's disease and other malignant lymphomas (p. 4146)

Au^{198}

Radioactive gold prepared by license of the Atomic Energy Commission. Inject directly into malignant tumor masses in doses of 4 mg. Employed in Hodgkin's disease, lymphosarcoma, chronic lymphatic leukemia and squamous cell carcinomas of nose and eyelids.

Castration

Of female in breast malignancy. Of male in prostatic malignancy. Simultaneously give androgen injections to the female and estrogen injections to the male.

Cortisone (adrenocortical extract)

Use under special allocation in the manner of ACTH (p. 4145)

Excision

Surgical treatment of choice particularly in treatment of asymptomatic malignancy.

I^{131}

Radioactive iodine prepared by license of the Atomic Energy Commission. For treatment of thyroid malignancy and its metastases after total thyroidectomy.

Irradiation

Using x-ray or radium procedure of choice preoperatively, postoperatively in association with surgery and in the surgically inoperable malignancies. Use aureomycin concurrently to minimize radiation sickness and permit use of larger doses.

Isotopes

See Au^{198} , I^{131} and P^{32}

ANTICARCINOGENIC THERAPY AVAILABLE TO THE PRACTITIONER (Continued)**Estrogen**

Use orally or by intramuscular injection in carcinoma of the prostate preferably in conjunction with castration. Constitutes the single most outstanding practical contribution to the chemotherapy of malignancy. retards the neoplastic growth of prostatic epithelium (Gellhorn and Jones) Use also in postmenopausal females with profuse nonosseous carcinomatous secondary to breast malignancy (p 4325)

Folic acid conjugates and analogs

See Teroplerin.

Folic acid antagonists

See Aminopterin

Shilbamidine

Suggested for carcinogenic action in multiple myeloma. Inject 150 mg intramuscularly with 2% procaine to total 3 to 5 gm (20 to 30 daily injections). Toxic reactions frequent fundamental lesions not significantly altered. To be used only as a last therapeutic resort (p 4222)

Teroplerin

Folic acid conjugates and analogs produce regression in a significant number of instances of mouse sarcoma 180. Preparation available as teroplerin (Lederle) in ampuls and vials containing 10 mg to the cc. Inject intramuscularly once daily for the first week in doses of 1 cc and twice daily for three or four weeks. Teroplerin possesses no toxicity in the recommended doses. It must not be used to the exclusion of surgery and irradiation.

The Council on Pharmacy and Chemistry of the A.M.A. 1948 reviewing the treatment of 275 patients noted only that relief and subjective improvement was reported in 50% of patients. Despite negative reports in mass statistics we have observed three remarkable instances of survival seemingly due to teroplerin. It is our opinion that a course of teroplerin merits trial by the practitioner particularly since the preparation has no toxicity and if it accomplishes nothing else it gives the practitioner something tangible to do when he visits his patients with metastatic malignancy. Additionally it satisfies the demanding family which insists that something be done.

Urethane (Ethyl Ester of Carbamic Acid)

Urethane is commercially available in pint and gallon bottles (Abbott). Each 30 cc contains 4 gm of the drug. Oral doses of 4 cc twice daily to total 1 gram reduce leukocyte counts in chronic myelogenous leukemias. Toxic effects include anemia, leukopenia, thrombocytopenia, ecchymoses, hematuria and pulmonary edema. If there is an absence of toxic symptoms, and a favorable therapeutic response, doses may be increased by increment of 4 cc to maximum daily dose of 44 cc (45 gm). Under favorable conditions with reduction of total leukocyte count to 10,000 or 20,000 WBC and in the absence of toxic symptoms, maintenance doses approximating 1 gm daily (8 cc of commercially available preparation) may suffice. Urethane is less useful but merits trial in chronic lymphatic leukemia. A satisfactory therapeutic agent in producing temporary remission in chronic lymphatic and myelogenous leukemia (Gellhorn and Jones). May be an additional useful weapon against prostatic carcinoma (Huggins) though the use of the drug is potentially hazardous since it can produce marked depression of bone marrow functions (Webster).

INOPERABLE MALIGNANCY

Practical Management

1 For the female with metastatic breast malignancy or an ovarian neoplasm advise roentgen or surgical castration followed by injections of androgen

2 For the male with prostatic or testicular malignancy advise surgical or roentgen castration with injections of estrogen

3 In all patients try the effects of teropterin. Give 1 cc intramuscularly or intravenously daily for three weeks. Then suggest a treatment holiday with the understanding that therapy will be resumed. In this way if nothing else is accomplished the patient receives psychotherapy and does not feel completely abandoned to fate

4 Give sedatives during the day to those who are confined to the house or bedridden. Prescribe a hypnotic each night

5 For pain unrelied by measures above indicated supplement with an analgesic antipyretic such as acetylsalicylic acid in doses of 0.3 to 0.6 gm several times daily

6 Suggest free use of the patient's favorite alcoholic beverage in order to save opiates for more serious discomfort

7 When driven to the opiates start with oral preparations such as methadone or metopon so that the patient does not have to be given drug by hypodermic. Try to use smallest possible doses such as 2.5 mg two or three times daily. Increase to 10 mg three or four times daily if necessary before proceeding to next preparation

8 When oral opiate no longer gives comfort pass on to hypodermic use of demerol since this has minimum side effects on bladder and rectum. Begin with doses as small as 50 mg if possible but progress to 200 mg three or four times daily if needed

9 Cautiously try synergism with scopolamine (hyoscine). To opiate add 0.25 to 0.5 mg in probatory fashion

10 Finally in desperation substitute dilaudid or morphine itself. At this time consider surgical aid additionally

11 In consultation with specialist anesthetist or surgeon discuss operative intervention. If pain is localized attempt nerve block, sympathectomy or chordotomy. However if these measures fail or if pain is widespread and generalized consider lobotomy which is a relatively simple technical procedure in the hands of the expert and which gives amazing results for relief of pain and addiction

For the more concrete management of neoplasms in various structures of the body consult the following

Blood and blood forming organs neoplasms of

Digestive system neoplasms of

Endocrines neoplasms of

Female reproductive system neoplasms of

Male reproductive system neoplasms of

Nervous system neoplasms of

Respiratory system neoplasms of

Nitrogen Mustards

Highly toxic war gas - injected intravenously to produce temporary remissions in Hodgkin's disease lymphosarcoma leukemia mycosis fungoides polycythemia vera and miscellaneous malignant lymphomas. Because of toxicity recommended only in surgically inaccessible growths and in patients who have become roentgen resistant (p 4439)

Surgery

Radical removal by excision is procedure of choice. May be accompanied by pre-operative or postoperative radiation. May be accompanied concurrently by castration particularly in malignancies of breast and prostate and hormone therapy.

Palliative Therapy of Inoperable Malignancy

Practitioner and consultant specialist cooperate in an effort to afford palliation to the victim of inoperable malignancy. For the most part the problem is relief of pain. It is customary to start with least effectual remedies holding in reserve more potent modalities against greater intensity of anguish at a later date.

When drugs fail surgery merits consideration starting with the simple injection or nerve block and proceeding to the more complicated sympathectomy chordotomy or lobotomy.

PALLIATION TREATMENT FOR PAIN RELIEF IN INOPERABLE MALIGNANCY**Sedatives (p 3835)**

For use during day with or without analgesics

Hypnotics (p 3836)

For use at night with or without analgesics

Analgesic Antipyretics (p 3832)

Try non habituating preparations before recourse to opiate and their substitutes

Opiates and Substitutes

Prefer less objectionable synthetics such as methadon (p 4416) meperdon (p 4417) and meperidine (isonipicaine demerol) before being driven to dihydromorphinone (dilaudid) or morphine sulfate. Try combinations with sedatives hypnotics scopolamine and analgesic-antipyretics

Nerve block

Alcohol injections by specialist, if possible

Sympathectomy

By consulting neurosurgeon

Chordotomy

By consulting surgeon, particularly with spinal cord metastases

Lobotomy

Of inestimable value in diffuse intractable pain, uncontrolled by opiates and their synthetic substitutes

INOPERABLE MALIGNANCY

Practical Management

1 For the female with metastatic breast malignancy or an ovarian neoplasm advise roentgen or surgical castration followed by injections of androgen

2 For the male with prostatic or testicular malignancy advise surgical or roentgen castration with injections of estrogen

3 In all patients try the effects of teropterin Give 1 cc intramuscularly or intravenously daily for three weeks Then suggest a treatment holiday with the understanding that therapy will be resumed In this way if nothing else is accomplished the patient receives psychotherapy and does not feel completely abandoned to fate

4 Give sedatives during the day to those who are confined to the house or bedridden Prescribe a hypnotic each night

5 For pain unrelieved by measures above indicated supplement with an analgesic antipyretic such as acetylsalicylic acid in doses of 0.3 to 0.6 gm several times daily

6 Suggest free use of the patient's favorite alcoholic beverage in order to save opiates for more serious discomfort

7 When driven to the opiates start with oral preparations such as methadone or metopon so that the patient does not have to be given drug by hypodermic Try to use smallest possible doses such as 2.5 mg two or three times daily Increase to 10 mg three or four times daily if necessary before proceeding to next preparation

8 When oral opiate no longer gives comfort pass on to hypodermic use of demerol since this has minimum side effects on bladder and rectum Begin with doses as small as 50 mg if possible but progress to 200 mg three or four times daily if needed

9 Cautiously try synergism with scopolamine (hyoscine) To opiate add 0.25 to 0.5 mg in probatory fashion

10 Finally in desperation substitute dilaudid or morphine itself At this time consider surgical aid additionally

11 In consultation with specialist anesthetist or surgeon discuss operative intervention If pain is localized attempt nerve block sympathectomy or chordotomy However if these measures fail or if pain is widespread and generalized consider lobotomy which is a relatively simple technical procedure in the hands of the expert and which gives amazing results for relief of pain and addiction

For the more concrete management of neoplasms in various structures of the body consult the following

Blood and blood forming organs neoplasms of

Digestive system neoplasms of

Endocrines neoplasms of

Female reproductive system neoplasms of

Male reproductive system neoplasms of

Nervous system neoplasms of

Respiratory system neoplasms of

Skeletal system neoplasms of
 Tegumentary system neoplasms of
 Urinary system neoplasms of

NERVOUS SYSTEM NEOPLASMS OF

Neoplasms of the central nervous system are problems for the specialist. In their management the practitioner functions for early diagnosis and rapid reference.

The diagnosis of neoplasms of the central nervous system is made difficult through protection of brain and cord by bony structures. Inspection and palpation yield no information. The early signs for the most part are inferential, resulting from increased intracranial or intraspinal pressures and from chance involvements of cranial or spinal nerves.

Fortunately in the practitioner's experience primary malignancies of the central nervous system are infrequently encountered. Unhappily however metastases (particularly from cancers of breast, prostate and digestive tract) are seen with great frequency.

BRAIN TUMORS

Practical Management

1. Note manifestations of increased intracranial pressure (p 1421) or of localized neurologic signs (p 1423)
2. Examine fundus oculi for papilledema or optic atrophy (Fig 269 p 1422)
3. Get blood for serodiagnosis of malignancy (p 4431)
4. X ray skull. Note deformities of sella turcica (Fig 248 p 1177) abnormal calcifications (Fig 268 p 1421) or unusual hyperostoses (Fig 270 p 1423)
5. Obtain an electroencephalogram (Fig 273 p 1427)
6. Refer to consultant neurologist or neurosurgeon for re assessment of neurologic status. Under his direction perform lumbar puncture and make manometric readings. Send spinal fluid to clinical pathologist for cell count, protein estimation, determination of sugar content, colloidal gold curve, search for tubercle bacilli, serologic tests for syphilis and guinea pig inoculation.
7. Discuss the possibility of obtaining additional information from ventriculography (Fig 71 p 1424) or encephalography (Fig 272 p 1425)
8. If facilities are available consider injection of radioactive isotope for tracer diagnosis
9. Discuss exploratory craniotomy

SPINAL CORD TUMORS**Practical Management**

- 1 Look for clinical evidences of cord pressure (Fig 274 p 1431 and p 1430) and for localized neurologic signs (p 1423)
- 2 Get anteroposterior lateral and lateral oblique radiographs of vertebral column
- 3 Obtain blood for serodiagnosis of malignancy (p 4431)
- 4 Perform lumbar puncture Make manometric readings (pp 1434 and 3735)
- 5 Send spinal fluid to clinical pathologist for cell count protein estimation determination of sugar content colloidal gold curve search for tubercle bacilli serologic tests for syphilis and guinea pig inoculation
- 6 Consult specialist neurologist or neurosurgeon for re assessment of neurologic status Discuss contrast laminography through introduction of iodized oil
- 7 If facilities are available consider injection of radioactive isotopes for tracer diagnosis
- 8 Discuss exploratory laminectomy

NEWCASTLE VIRUS DISEASE (HUMAN)**General Principles of Diagnosis and Therapy**

- 1 Avian pseudo plague or pneumoencephalitis (Newcastle virus disease) is commonly observed among domestic fowl It is unusual for the diagnosis of this infection to be made in the human being
- 2 Gough (Ohio State Med J 45 25 1949) observed ten patients who developed the syndrome after eating chicken Clinical manifestations included nausea vomiting fever malaise anorexia abdominal pain lumbar pain and headache The diagnosis was confirmed by virus neutralization tests
- 3 Epidemiologic studies suggest that the incubation period of Newcastle virus disease varied from two one half to five or more days The suspected chickens were said to have been thoroughly cooked
- 4 It is suggested that warnings be issued to those who kill and dress their own poultry to reject fowl afflicted with avian pseudoplague
- 5 A trial of treatment with aureomycin or chloramphenicol merits consideration

NITROGEN MUSTARD

Nitrogen mustard is employed by special investigators in the treatment of the leukemias Hodgkin's disease and other malignant lymphomas In the majority of present investigations the bis form of nitrogen

mustard is preferred in doses of 0.1 mg per kilogram of body weight injected intravenously

Technic Goldman and associates (Arch Int Med 82:125, 1948) inject nitrogen mustard through an intravenous infusion of 1000 cc of isotonic sodium chloride solution. After the infusion is started a solution of nitrogen mustard crystals is made by introducing 10 cc of isotonic sodium chloride into a bottle containing 10 mg of the drug. The required amount of solution is then withdrawn in the dose of 1 cc for each 10 kilograms (22 lbs) of body weight. This amount is injected immediately into the rubber tubing of the running sodium chloride infusion. Immediate injection is essential since nitrogen mustard is hydrolyzed and becomes ineffective after a few moments.

Available Preparation

Mechlorethamine Hydrochloride (methyl bis [β chloroethyl] amine hydrochloride) is available in cartons of four rubber stoppered vials each vial containing 10 mg of the drug triturated with sodium chloride q.s. ad 100 mg (Merck).

Therapeutics

Nitrogen mustards exert a powerful cytotoxic reaction resembling in some respects the effects of roentgen irradiation. Most susceptible to the cytotoxic action of nitrogen mustard are formed elements of the blood and gastrointestinal mucosa. Initially this is manifest by reduction in the numbers of leukocytes, neutrophilic granulocytes and lymphocytes. Later erythrocytes and thrombocytes are effected.

RESULTS OF NITROGEN MUSTARD THERAPY

| Diagnosis | Total No of Patients Treated | Per Cent Improved |
|--|------------------------------|-------------------|
| Hodgkin's disease | 107 | 92 |
| Lymphosarcoma including reticulum cell sarcoma | 34 | 52 |
| Acute leukemia | 14 | 36 |
| Myelogenous leukemia | 19 | 42 |
| Lymphatic leukemia | 16 | 75 |
| Mycosis fungoides | 4 | 75 |
| Polycythemia vera | ■ | 100 |
| Miscellaneous (teratoma of testis, chronic reticuloendotheliosis, giant follicle lymphoma, sympathoblastoma, multiple myeloma, etc.) | 18 | 80 |

Adapted from Goldman, Arch Int Med 82:125, 1948.

In the treatment of Hodgkin's disease where nitrogen mustard is most effectual, reduction in formed elements of blood is associated with therapeutic manifestations of debility, decrease in glandular enlargement and weight gain. Remissions are produced more rapidly than with roentgen irradiation but they are of no longer duration. For the most part, nitrogen mustard therapy is reserved for those who have become roentgen resistant. Following a course of nitrogen mustard

sensitivity to roentgen therapy may be restored. Whether alternation of nitrogen mustard and irradiation or combined therapy provides optimum results remains as yet to be determined.

Besides Hodgkin's disease nitrogen mustards produce remissions (similar to those effected by roentgen irradiation) in malignant lymphomas, lymphosarcoma, chronic lymphatic leukemia and polycythemia vera.

Toxicity

Nausea and vomiting are universal but transitory. There is no reported instance of serious diarrhea. The formed elements of the blood are persistently depressed for two to four weeks. No fatal infection has been reported in spite of counts as low as 200 leukocytes per cubic millimeter. All patients who survive sufficiently long appear to make a satisfactory recovery from drug toxicity. No toxic rashes have been observed.

ONCHOCERCIASIS

Treat with hetrazan as in filariasis (p. 4327)

ORNITHOSIS

[Psittaco is Parrot Fever]

General Principles of Diagnosis and Therapy

1. Ornithosis is a specific infection produced by an organism midway between rickettsias and viruses (p. 473).

2. The etiologic agent is a coccoid elementary body functionally demonstrable with basic dyes and readily seen under the ordinary microscope. It contains intracellular inclusion bodies and is held back partially or completely by ordinary filters. It is readily propagated in the yolk sac and embryonated hens' egg and in tissue cultures.

3. The organism of ornithosis is closely related to a large group of similar pathogenic microbes including those of lymphogranuloma venereum, murine and feline pneumonitis, meningeal pneumonitis, spontaneous mouse pneumonitis, Australian mouse pneumonitis, human virus pneumonitis, Illinois virus pneumonitis and Louisiana virus pneumonitis.

4. In addition to exotic birds the virus of ornithosis is transmitted by domestic animals such as ducks.

5. The diagnosis may be established by culture of the invading organism in specially equipped laboratories and by complement fixation tests made one week after recovery.

6 The virus or rickettsia of ornithosis responds specifically to penicillin aureomycin and chloramphenicol

Practical Management

1 Isolate patient and inaugurate non specific treatment for infection (pp 67-73)

2 Deposit 300 000 to 600 000 units of procaine penicillin G in aqueous solution or suspension Prepare to maintain antibiotic levels by use of a similar daily dose If the patient cannot be seen daily deposit penicillin in sesame oil with 2% aluminum monostearate (p 4453)

3 In the presence of patient sensitivity or organism resistance substitute aureomycin or chloramphenicol Give either in a loading dose approximating 50 mg per kg of body weight (3.5 gm for the average adult weighing 150 lbs) Administer the priming dose through ingestion of 2 products every few minutes accompanied by small amounts of milk ice cream cream cheese or fruit drink Four hours after the priming dose has been taken start daily maintenance doses using an amount equal to the priming dose divided into 4 equal portions given at 6 hour intervals

4 If patients are severely ill or fail to respond with sufficient rapidity to penicillin or if their general condition is such that speed of recovery is essential supplement penicillin with aureomycin or chloramphenicol using priming and maintenance doses as above

ORTHOXINE HYDROCHLORIDE

Orthoxine hydrochloride is a new sympathomimetic amine

Available Preparations

Orthoxine Hydrochloride Tablets (Upjohn) 100 mg

Pharmacology and Therapeutics

Like isuprel and isonorin, orthoxine has a specific bronchodilator effect It is essentially free from vasopressor cardiac and central nervous system effects as manifested by epinephrine and ephedrine

For treatment of mild and moderate paroxysms of asthma order 1 or 2 tablets and repeat in three or four hours For prevention of attacks suggest a 100 mg tablet three or four times daily (p 4270)

OXYQUINOLINES

The oxyquinolines are iodine-containing compounds used as amebicides (p 4182) and trichomonacides (p 4592)

OXYQUINOLINE PRODUCTS

| Name | Available Commercial Products | Comments |
|-------------------------------------|---|---|
| Chiniofon (Anayodin Quinoxyl) U S P | Chiniofon Tablets (enteric coated) 250 mg (Abbott Premo Endo Winthrop) Anayodin Tablets (enteric coated) 250 mg (Bischoff) Quinoxyl Tablets 250 mg (Burroughs Wellcome) | For treatment of amebiasis, giardiasis or balantidiasis give 1 gm three times daily for one or two weeks. Repeat after rest of ten days if necessary. |
| Diodoquin N R R | Diodoquin Tablets 210 mg (Searle) | Favored oxyquinoline compound. Most effective and least likely to cause treatment diarrhea on the second or third days of administration. In amebiasis especially effective against intra intestinal forms. Sterilizes cysts especially in asymptomatic carriers. |
| Vioform N R R | Vioform Tablets 250 mg (Ciba) Vioform Vaginal Inserts 250 mg (Ciba) Vioform insufflate 25% (Ciba) | As amebicide give 250 mg four times daily for ten days. As trichomonocide insert vaginal tablet, or insufflate powder. |

OXYURIASIS

[Seat Worm Pinworm Infestation]

Principles of Diagnosis and Therapy

1 Oxyuriasis is the most common helminthic infestation observed in the Americas (p 1902)

2 Establish the diagnosis by obtaining an anal specimen using the NIH swab (Fig 437 p 1903). From this ingenious device ova may be recognized microscopically (Fig 433 p 1894)

3 Since oxyuriasis is a familial household infection treat all members of the family simultaneously to prevent constant reinfection

4 Instruct individuals of the manner in which the life cycle of the pinworm is accomplished. Egg are transferred from anal region to mouth through errors in personal hygiene. Warn patients to wash hands thoroughly after urination, enemas and defecation and again before meals. Each should anoint anogenital regions thoroughly after stool with 2% ammoniated mercury. Finger nails are cut short. Toilet seats are scrubbed daily with 1/1000 bichloride of mercury. Bed and personal linen are boiled before washing. Infants and children must wear snug cotton drawers and gloves at night to prevent auto inoculation.

Practical Management

1 As anthelmintic of choice use gentian violet in four hour Seal Ins. The adult is given 2 tablets each containing 30 mg three times daily one hour before meals for eight days. After a rest period of one week the eight day course is repeated.

2 As an alternative tablets of diphenan (p benzylphenylcarbamate) are advised. Diphenan is marketed (Burroughs Wellcome) in winter green flavored wafers containing 0.5 gm. For the adult order one or two of these three times daily after meals for one week. Nightly during treatment and every second night thereafter the patient takes an enema made by dissolving a teaspoonful of bicarbonate of soda in a half pint of warm water. After discharging the bicarbonate enema another is taken with one heaping tablespoonful of salt to another half pint of water. If possible the saline enema is held for ten minutes.

3 At the end of treatment the patient takes a saline laxative of 30 to 45 gm of sodium sulfate.

4 More toxic than gentian violet or diphenan is phenothiazine (dibenzo 1,4 thiazine) which may be used in refractory cases. Daily doses of 0.25 gm are given four times daily for four to six days. Toxic symptoms include nausea vomiting hematuria albuminuria and aplastic anemia.

PAMAQUIN NAPHTHOATE NF

Prior to introduction of chlorguanide pamaquin appeared to be the one antimalarial capable of activity against sexual forms or gametocytes of falciparum malaria. Despite its toxicity (p 519) it merited employment for the sole purpose of destruction of the silent pool from which the mosquito vector might obtain *P. falciparum* for infection of other patients (p 4294).

The efficacy and relative nontoxicity of chlorguanide relegates the potentially hazardous but once useful pamaquin (plasmochin) to the growing list of obsolete derivatives which the practitioner fortunately has no longer to consider in the treatment of malaria (p 507).

Available Product

Plasmochin Naphthoate NF (Winthrop) Tablets 20 mg

Therapeutics

See p 519

Dosage

Against gametocytes of falciparum 20 mg thrice daily for three days with 1 gm sodium bicarbonate

Toxicity

See p 519

PARA AMINO BENZOIC ACID (PABA)

Introduction of para aminobenzoic acid as an antibiotic agent represented another paradox in the treatment of bacterial invasion (p 4219) Para aminobenzoic acid which nullifies the activity of sulfonamides is both rickettsicidal and amebacidal (p 4182)

Available Products

Tablets Sodium PABA 0.5 gm (International Vitamin Co and Wyeth)

Therapeutics

PABA exerts a depressant action on the metabolism of rickettsia and amebas. It is of proven value in the treatment of typhus fever, Rocky Mountain spotted fever, tsutsugamushi fever and other rickettsioses (p 4506). Despite its efficacy it already has been superseded by aureomycin and chloramphenicol in the management of rickettsemias.

PABA may prove permanently useful however in the treatment of amebic dysentery (p 4182) and allied infestations such as giardiasis (p 4345) and balantidiasis (p 4254). It is also on trial in the management of rheumatic fever.

Dosage

The initial therapeutic dose of PABA is 4 to 6 gm followed by 2 to 3 gm every two hours, night and day.

Blood levels of 30 to 50 mg per 100 cc of PABA must be obtained and maintained for maximum effects.

Toxicity

With levels greater than 50 mg per 100 cc of PABA in the blood there may appear evidences of renal or hepatic irritation. These however are reversible when the antibiotic is discontinued.

PABA is not given in conjunction with sulfa compounds whose antibacterial effects it nullifies. It may be given however with penicillin, streptomycin, aureomycin or chloramphenicol.

PARAGONIMIASIS

[Pulmonary Distomiasis Lung Fluke]

Principles of Diagnosis and Therapy

1. Paragonimiasis is a pulmonary infestation with the lung fluke. The diagnosis is established by finding ova or parasites in sputum. Frequently paragonimiasis is associated with pulmonary tuberculosis.

2. Paragonimiasis does not respond well to the antimonials but is relieved by courses of emetine (p 529).

PEDICULOSIS

General Principles of Diagnosis and Therapy

1 Pediculosis occurs on head (*P. capitis* Fig 901 p 3183) body (*P. vestimentorum corporis*) or pubis (*P. pubis* crabs Fig 902 p 3183)

2 The diagnosis is established by identification of the causative organism (Fig 903 p 3184) and its ova (nits)

3 Diagnosis and therapy are of more than passing importance since pediculi may be vectors of typhus and relapsing fevers (Table 2 p 42)

4 Delousing is accomplished on a mass scale by use of insecticides particularly those containing DDT (p 4373)

5 For the individual treatment is best conducted with the least toxic preparation For this purpose Kwell represents first choice using this preparation as in scabies (p 4514)

6 Second choices include benzyl benzoate and lotio bornate also used as in the treatment of scabies

7 Obsolete are older pediculocides benzene kero ene and larkspur

8 Too toxic for clinical use are beta naphthol benzoate lethane 384 mercurial preparations rotenone and the proprietary cuprex DDT has proven much less efficacious than the preparations of choice above mentioned

9 In addition to use of pediculocide the patient must be instructed in methods of preventing dissemination and reinfection These include boiling of linen and bed clothes sterilization of toilet seats treatment of other members of the household and other contacts etc

10 Secondary bacterial infection of pediculosis is exceedingly common Pyoderms require local therapy with an antibiotic such as bacitracin or tyrothricin unless there are systemic manifestations under which circumstances deposit penicillin as in other pyogenic infections

PEDICULOCIDES

| Preparation | Comment |
|---|--|
| Benzene | Obsolete inflammable |
| Beta naphthol benzoate (Merck, Mallinckrodt) | In 3 to 10% ointment Prefer less toxic preparations (p 4447) May cause renal and ocular lesions |
| Benzyl benzoate U S P (Lilly Merck Mallinckrodt Breon Dorsey Burroughs Wellcome) | Effective in 20 or 25% lotion (p 4446) A safe and effective preparation of choice Avoid contact with eyes |
| Bornate (Wyeth) | Available lotion is a 5% solution of isobornyl thiocyanate Effective and safe pediculocides of choice (p 4447) |
| Cuprex (Merck) | Effective proprietary copper pediculocide (p 4446) Contains tetrahydro acetone copper and liquid paraffin Inflammable May cause porphyria (p 4628) |
| DDT | Use in 10% strength in talc or pyrophyllite Not as effective as other pediculocides |
| Delphinium | Obsolete |
| Kerosene | Obsolete inflammable |

PEDICULOCIDES (Continued)

| Preparation | Comment |
|-----------------|---|
| Kwell (CSC) | A vanishing cream base containing 1% hexachlorocyclohexane (p 4447) Effective and safe pediculocide of choice |
| Larkspur | Obsolete |
| Lethane (p 384) | Use as 15% solution in kerosene Effective but in flammable Not commercially available |
| Mercury | Use as 3 to 10% ammoniated mercury ointment Messy and dangerous Obsolete Prefer newer preparations (p 4447) |
| Rotenone | Too toxic for clinical use (p 4446) |

Practical Management

- 1 After a hot bath rub 25 to 50 gm of Kwell ointment (CSC) into affected area
- 2 Refrain from bathing or washing for twenty four hours
- 3 After twenty four hours bathe and don fresh underclothes night clothes and linen
- 4 Repeat treatment in one week if necessary
- 5 If lotion borate (Wyeth) is substituted work 30 to 60 cc into lather at site of infestation After five to ten minutes if irritation is not excessive comb hair and let skin dry Repeat in a few moments or an hour if necessary

PELLETIERINE TANNATE U S P

Because of its toxicity (p 1896) pelletierine has been replaced by oleoresin of aspidium (p 4197) in the treatment of teniasis

If pelletierine is substituted a single oral dose of 250 mg is interpolated in the routine described for aspidium therapy

PENICILLIN

Historical Review The remarkable properties of penicillin were recognized before the first printing of the Integrated Practice of Medicine (1946) The text detailed its source and isolation chemical and physical properties and methods used for biological standardization (p 106) It listed the then available preparations and discussed their absorption excretion mechanisms of action therapeutics toxicity and indications for use in specific probatory and desperation-antibiotic therapy (p 114)

Enthusiasm for penicillin's astounding virtues did not obscure many unsolved problems in antibiotic therapy Penicillin was not virucidal or antirickettsial gram negative bacilli were relatively resistant in the treatment of penicillin sensitive organisms materials were scarce costs were high available preparations were unstable and results were occasionally inconsistent oral administration was unsatisfactory necessitating parenteral introduction and rapid excretion through kidneys required frequent injections by day and night in order to maintain effective levels in blood and tissues

In the brief years that have elapsed since publication of earlier material there has been ample confirmation of all basic facts Additionally many deterrents have been eliminated

by the ingenuity and resourcefulness of workers in many fields. Ample supplies are readily available, costs have been reduced, crystalline preparations possess great stability, oral administration is practicable, and several satisfactory repository methods provide prolonged levels from infrequent injections, permitting ambulatory treatment.

Dynamics of Penicillin Action

During early days of penicillin therapy when supplies were insufficient and unit cost was a distinct factor in estimating dosage schedules it was an understandable and justifiable policy to use minimum effective amounts of antibiotic. In order to obtain a measurable yardstick for guidance, efforts were made to determine exact penicillin blood levels required for bactericidal activity, and then to estimate the amount of penicillin needed to achieve these levels. In this way maximum use was made of invaluable material and the greatest numbers of individuals were treated with as little wastage as possible.

After penicillin supplies increased, the majority of clinicians found themselves in agreement with opinions stated in the first edition of *The Integrated Practice of Medicine*. These held that dosage tables for penicillin called for quantities that are altogether too small, and

Some of the early disappointments of penicillin therapy can be attributed to small dosage rather than to insensitivity to the therapeutic agency. Thus the original dosages used for gonorrhea and syphilis respectively were 60,000 and 1,200,000 units. Our practice is to use in gonorrhea 500,000 to 1,000,000 units and in syphilis no less than 10,000,000 units (p. 107). Increasing clinical experience and additional laboratory information have served to favor the principle of penicillin overdosage, now made possible by availability of vast supplies sold at incredibly low costs, considering the therapeutic potential of the antibiotic. At the same time it has become apparent that determinations of penicillin blood levels (never practicable for the private practitioner) may be quite misleading as guides to therapy.

Many clinical impressions based merely on pragmatic experience found laboratory corroboration in Jawetz's study of the dynamics of the action of penicillin (*Arch. Int. Med.* 81:203, 1948). This important work may be summarized in the following general statements:

1. Single large injections suffice to cure many experimental infections.
2. Smaller doses, to be equally effective, must be repeated at frequent intervals over a longer period of time.
3. The effects of penicillin persist beyond the duration of measurable blood levels. For example, penicillin may be detected in the blood for only an hour, but its effects may be measured bacteriologically for six to eight hours.
4. Prolonged effect of penicillin after absence of detectable amounts in blood is due to persistence of antibiotic in tissues. Here invading bacteria may be (a) unable to reproduce due to damage to enzyme systems, or (b) they may be rendered more susceptible to bodily defenses such as phagocytosis.
5. Reliance on penicillin blood levels may be misleading in two

ways (a) bactericidal activity may persist in tissues despite absence of detectable levels of antibiotic in circulating fluid (b) there may be detectable levels of antibiotic in blood and even sterilization as attested by negative blood cultures yet bacteria may continue to grow in tissues

These views are offered in confirmation of the policies that penicillin must be administered in a priming dose vastly in excess of the indicated need and that antibiotic must be continued beyond the seemingly indicated required span of time

Varieties

Recognition identification and analyses of at least four sub-groups of penicillin have resulted in (1) elimination of less effective varieties especially penicillin F and (2) establishment of crystalline penicillin G as the standard for therapeutic efficacy

Master Standard

The penicillin master standard adopted by the Federal Food and Drug Administration is the crystalline sodium salt of penicillin G of a potency of 1 650 units per milligram as determined on the basis of many assays made by leading manufacturers of penicillin and by the Northern Regional Research Laboratory

VARIETIES OF PENICILLIN

Penicillin F (2-pentenyl penicillin)

Only 1/4th as effective as crystalline penicillin G in treatment of syphilis.

Penicillin K (heptyl penicillin)

Less effective than penicillin G in syphilis. Mixtures limited to 30% content by Food and Drug Administration

Penicillin X (p-hydroxybenzyl penicillin)

Less dependable than crystalline penicillin G except in gonorrhea

Penicillin B (benzyl penicillin)

Most effective in syphilis. Prefer to penicillin F K or X. Available in crystalline form as salts of sodium potassium and procaine. May be injected in aqueous solution aqueous suspension, suspension in oil suspension in oil and white wax or beeswax, or suspension with 2% aluminum monostearate. Eliminates reactions due to impurities. Lessens antigenic threat in hypersensitivity reactions. Eliminates variations in treatment results due to admixture with varieties of lesser potential such as penicillin F in syphilis

Salts

Salts of aluminum calcium potassium sodium and procaine penicillin have been prepared. For parenteral introduction crystalline sodium potassium or procaine salts of penicillin G are distinctly favored over amorphous calcium and sodium derivatives. The aluminum salt may be preferred for oral use

SALTS OF PENICILLIN**Calcium Penicillin (Amorphous) Sodium Penicillin (Amorphous)**

Require refrigeration even in dry state solution stable only three to seven hours somewhat less expensive than crystalline salts of sodium and potassium penicillin G but not sufficient to compensate for other shortcomings

Aluminum penicillin

Advocated only for oral use not inactivated in stomach acid insoluble gradually dissolves in alkaline medium Absorbed with maximum utilization of dose Results comparable to similar amounts injected parenterally May prove oral product of choice

Sodium Penicillin (Crystalline) Potassium Penicillin (Crystalline)

Stable in dry state at room temperatures Water soluble Prefer to unstable amorphous mixtures Use as crystalline sodium or potassium penicillin G for ointments troches aerocols suppositories tablets aqueous solutions and oil suspensions with or without white wax or beeswax and with or without 2% aluminum monostearate Prefer to procaine penicillin G for immediate effect after parenteral introduction Use exclusively for intravenous intrathecal or intraventricular introduction Prefer procaine penicillin G for prolonged levels

Procaine Penicillin G (Crystalline)

Stable at room temperature Relatively insoluble in water Prefer to amorphous preparations Yield to crystalline sodium or potassium salts for local topical and oral administration for immediate levels after parenteral injection and for intravenous intrathecal and intraventricular introduction Otherwise parenteral preparation of choice for prolonged levels economy and efficiency Use aqueous suspension for 24 hour level oil suspensions for 48 hour levels and oil suspensions with 2% aluminum monostearate for 96 hour levels. Compensate for early lag by combining 100 000 units crystalline sodium or potassium with first 300 000 units procaine G

Vehicles and Accessories Used in Parenteral Penicillin Therapy

For the most part newer vehicles and accessories for parenteral penicillin therapy have been introduced for the purpose of maintaining prolonged blood and tissue levels when using rapidly excreted sodium and potassium salts of penicillin These latter were first suspended in oil with white wax or beeswax for slow release from tissue deposits then aluminum monostearate was added further to delay absorption and finally an effort to accomplish the same end by a different mechanism was responsible for development of carinamide staticin which through production of a renal blockade prevented overly rapid penicillin excretion by the kidneys

The popularity of these early and ingenious efforts to prolong antibiotic activity diminished with introduction of slowly soluble procaine penicillin G whose aqueous suspensions are capable of sustaining therapeutic levels for a period of at least twenty four hours and whose oily suspensions with 2% aluminum monostearate provide effective bactericidal efficacy for the majority of pathogens for as long as ninety six hours

VEHICLES AND ACCESSORIES FOR PARENTERAL PENICILLIN THERAPY

Aqueous Solutions

Isotonic saline dextrose molar lactate or distilled water. Solutions of crystalline sodium or potassium penicillin G stable at room temperature at least eight hours and twenty-four hours in the refrigerator. Use ordinary 2 cc hypodermic syringes and needles. Injections painless. Drying of syringe unnecessary. Cleansing with chemicals not required. Prompt but transitory levels require repetition after 3 or 4 hour intervals night and day.

Aqueous Suspensions (Shake well before use)

For relatively water insoluble procaine penicillin G. Use ordinary 2 cc syringe with 20 gauge needle. Drying of syringe unnecessary. Cleansing with chemicals not required. Levels sustained beyond twenty-four hours. Mixtures of 300,000 units of crystalline procaine penicillin G and 100,000 units of crystalline sodium or potassium penicillin G provide prompt and sustained blood and tissue levels.

Oil Suspensions (Shake well and warm before use)

In peanut or sesame oil. Require dry syringe and needles of 18 gauge. Injections may be painful. Hazard of oil embolization remote but possible. Real infiltrations not uncommon. Oil suspensions of crystalline sodium or potassium penicillin G give no more sustained levels than aqueous suspensions of crystalline procaine penicillin G.

Oil Suspensions with White Wax or Beeswax (Shake well and warm before use)

Combine peanut or sesame oils with 4.8% (w/v) white wax USP or beeswax (Romanowsky formula). Suspend amorphous or crystalline sodium or potassium penicillin G for 24 to 72 hour levels. Not advised because of difficulties of administration, dangers of injection, frequency of local infiltrations, requirement of dry needle and syringe and necessity to cleanse with alcohol and acetone mixtures. For 24 hour levels prefer aqueous suspensions of crystalline procaine penicillin G. For 24 to 96 hour levels prefer crystalline procaine penicillin G in oil with 2% aluminum monostearate (see below).

Oil Suspensions with 2% Aluminum Monostearate (Shake well and warm before use)

Peanut or sesame oil suspensions. As above. Same technical difficulties and hazards. Use for crystalline procaine penicillin G when 96 hour level is required.

Pencil

Sterile preparation of cholesterol derivatives in peanut oil to prolong penicillin action. Obsolete since introduction of procaine penicillin G.

Cannamide Sodium

For production of renal blockade. Give 4 to 8 half gram tablets every four hours (p. 4275). Obsolete since introduction of crystalline procaine penicillin G.

Romanowsky Formula

Oil suspension with wax.

Vehicles of Choice for Parenteral Penicillin Therapy

Immediate Level Intramuscular or intravenous aqueous crystalline sodium or potassium penicillin G.

Intravenous Injection Aqueous crystalline sodium or potassium penicillin G.

Intrathecal or Intracisternal Introduction Instill 10 000 to 20 000 units of crystalline sodium or potassium penicillin G in 10 to 20 cc of physiologic saline after withdrawal of slightly greater amount of cerebrospinal fluid May cause aseptic meningitis (p 4409)

24 Hour Level Intramuscular aqueous suspension of crystalline procaine penicillin G

Immediate and Sustained 24 Hour Level Intramuscular aqueous suspension of crystalline sodium or potassium penicillin G (100 000 units) with crystalline procaine penicillin G (300 000 units)

48 Hour Level Intramuscular oil suspension of crystalline procaine penicillin G

72 to 96 Hour Level Intramuscular oil suspension of crystalline procaine penicillin G with 2% aluminum monostearate

Available Products

Pharmaceutical manufacturers may point with pride to their achievements in penicillin therapy Since lifting governmental restrictions supplies of antibiotic exceed even the stupendous demands present costs are a small fraction of introductory prices crystallization of penicillin G guarantees stability and uniformity of product and oil suspensions additions of 2% aluminum monostearate and preparations of procaine penicillin G have eliminated the necessity for frequent injections

Penicillin currently can be given by injection aerosolization instillation sublingually orally rectally intravaginally subcutaneously intramuscularly intravenously into cavities intrathecally intraventricularly and presumably intraurethrally if necessary The grateful therapist who once pleaded and cajoled for each 1000 units now finds himself bewildered by the variety of available preparations These include Council accepted products as well as so called specialties with registered trade names and ingenious packaging devices

APPROVED PENICILLIN PRODUCTS

| Purpose | Preferred Product | Comment |
|--|---|--|
| TOPICAL APPLICATION | | |
| Skin Ointment | Crystalline potassium penicillin G NNR (Lilly) 1 gm = 1000 units | Because of high incidence of hypersensitivity reactions prefer bacitracin or tyrothricin |
| Ophthalmic Ointment | Crystalline potassium penicillin G NNR (Squibb) 1 gm = 100 000 units | Prefer aureomycin ointment which has broader bacterial spectrum and less risk of sensitization |
| Troches | Calcium penicillin NNR (Squibb) | Prefer tyrosets (tyrothricin) to avoid penicillin sensitization |
| biotic activity all penicillin G whose therapeutic levels for oil suspensions w/ all bactericidal activity | Crystalline sodium or potassium penicillin G NNR (Pruco CSC) 50 000 unit tablet | Prefer bacitracin or tyrothricin to forestall sensitization to penicillin which may preclude parenteral administration, at later date when need is greater |

APPROVED PENICILLIN PRODUCTS (Continued)

| Purpose | Preferred Product | Comment |
|--|---|---|
| Inhalators | Crystalline sodium penicillin G in cartridges (Abbott) or dispersator (Squibb) | Especially useful for self treatment, if risk of sensitization appears warranted |
| Suppositories (Vaginal) | Calcium penicillin NNR 100 000 and 250 000 units (Bristol Schenley) | Large unitage suggests postabsorptive effects Prefer parenteral injection |
| ORAL | | |
| Tablets | Aluminum penicillin 50 000 units (Hynson) Crystalline potassium penicillin G NNR 100 000 250 000 and 400 000 units (CSC Upjohn) | For self treatment, use quadruple parenteral doses Repeat every three or four hours |
| Powder | Crystalline procaine penicillin G (Lederle Spersoids) One rounded teaspoonful = 50 000 units | Palatable preparation for infants and children |
| PARENTERAL | | |
| Aqueous Solutions | Crystalline sodium or potassium penicillin G NNR 100 000 200 000 500 000 1 000 000 unit vials (Abbott, Bio-Ramco CSC Dwight, Lilly, Premo Pfizer Schenley Squibb) | All purpose preparations for subcutaneous intramuscular intravenous intracavitary intrathecal or intraventricular use Require repetition every three or four hours |
| Aqueous Suspensions (intramuscular only) | Crystalline procaine penicillin G NNR 1 cc = 300 000 units (Bristol CSC Lederle Parke Davis Squibb Upjohn) Crystalline procaine penicillin G with crystalline potassium penicillin G 300 000 units of former to 100 000 units of latter (Bristol CSC Lederle Parke Davis Squibb Upjohn) | Effective levels up to twenty four hours after one hour lag Ideal for immediate and sustained levels up to twenty four hours |
| Oil Suspensions (intramuscular only) | Crystalline procaine penicillin G NNF 1 cc = 300 000 units (Merrell Premo Pfizer Squibb) Crystalline procaine penicillin G in oil with 2% aluminum monostearate NNF (Abbott CSC Premo Squibb) Crystalline procaine penicillin G and crystalline potassium penicillin G 1 cc = 300 000 units of former and 100 000 of latter with 1.5% aluminum monostearate (Bristol) | After lag effective levels for forty-eight to seventy two hours Oil deposits may cause sterile abscesses and prolonged hypersensitivity reactions As above but levels for seventy two to ninety six hours Immediate and sustained levels to seventy two to ninety six hours |

Summary

The undernoted practical points merit consideration in the practical therapeutics of penicillin

1 Of the varieties of penicillin choose penicillin G (benzyl peni

cillin) Reject products derived from penicillin F penicillin K or penicillin X

2 Of the salts of penicillin choose crystalline sodium potassium aluminum or procaine penicillin G Avoid amorphous calcium or sodium penicillin except for reasons of economy

3 Avoid carinamide staccin Prefer to sustain levels with crystalline procaine penicillin G in aqueous or oily suspension the latter with or without 2% aluminum monostearate

4 Avoid topical applications if possible They give a higher percentage of sensitivity reactions (p 4136) and may preclude later use of penicillin when need is more urgent Prefer local use of bacitracin (p 4247) or tyrothricin (p 4622) for which there are no present parental indications

5 Avoid troches local sensitization is quite frequent and resulting glossitis may prove embarrassing to respiration

6 If ointments suppositories or troches must be used prefer crystalline sodium or potassium penicillin G

7 For oral use investigate claim that aluminum penicillin is as effectual orally as crystalline salts of sodium and potassium parenterally Until proven however give oral doses in four times the unitage indicated parenterally Oral doses of 100 000 units every three hours maintain blood levels approximating 0.03 to 0.5 unit. per cc. of serum These are sufficient to sterilize cultures of gonococci hemolytic streptococci and pneumococci they are insufficient for many meningococci staphylococci and most anhemolytic streptococci

8 Even if claims for aluminum penicillin are confirmed use oral products sparingly The unit cost almost equals parenteral larger doses offset the economy absorption is irregular sensitization is more frequent

9 For inhalation prefer bacitracin or tyrothricin for reasons indicated above Precede aerosolization by instillation of vasoconstrictor such as 0.05% privine or 0.25% neosynephrine

10 Quite likely the efficacy of vaginal suppositories results from postabsorptive activity since unitage is great Under these circumstances it is better to substitute parenteral injections since absorption is more certain and levels are probably better sustained

11 Try to avoid deposits of penicillin that produce significant levels beyond twenty four hours However if it is necessary to sustain levels use crystalline procaine penicillin G in sesame oil with 2% aluminum monostearate Prefer sesame to peanut oil It is less allergenic

12 Avoid suspensions with white wax or beeswax They are cumbersome to inject they require dry needles and syringes they may produce local induration necrosis and hypersensitivity reactions

13 For rapid levels inject aqueous solutions of crystalline sodium or potassium penicillin G intramuscularly or intravenously

14 For intrathecal or intracisternal administration use aqueous solutions of crystalline sodium or potassium penicillin G Remember that intrathecal penicillin may cause aseptic meningitis and that equally effective cerebrospinal fluid levels may be achieved with greater ease and safety by massive parenteral injections

15 For 24 hour levels inject aqueous suspensions of crystalline procaine penicillin G. Shake these suspensions well before use.

16 To compensate for lag of one hour following injection of each 300 000 units of crystalline procaine penicillin G add 100 000 units of crystalline sodium or potassium penicillin G to the priming dose. This combination of crystalline sodium or potassium penicillin G with crystalline procaine penicillin G in aqueous suspension approaches the ideal for the private practitioner. It can be given with a freshly boiled hypodermic syringe. 1 or 2 cc provides a combined unitage of 400 000 or 800 000 units respectively. Injections each twenty four hours assure effective maintenance levels. Hypersensitivity phenomena are not prolonged by long-deferred absorption.

Bacterial Spectrum

With increasing experience the broad spectrum of antibiotic activity claimed for penicillin (p 111) has been amply substantiated. With the possible exception of meningococcemia it has replaced sulfonamides (Table 14 p 113) in the treatment of coccal infections both gram negative and gram positive. As a treponemicide especially in syphilis its preeminence is unchallenged. In the management of gram positive bacillary invasions its effects are far from satisfactory and supplementation with antitoxic and antibacterial serums is mandatory. Finally in certain diseases such as psittacosis where penicillin was deemed worthy of trial for lack of something more potent to employ it has yielded to the clearly specific results obtained with aureomycin and chloramphenicol.

Staphylococci: With few exceptions staphylococci are penicillin sensitive. Resistant strains may develop; they are best treated by initial massive dosage and by continued and sustained high therapeutic levels supplemented with aureomycin, chloramphenicol, sulfonamides or one of the streptomycins.

Streptococci: With few exceptions notably anaerobic strains streptococci are penicillin sensitive. Resistant strains may develop; they are best treated by initial massive dosage and by sustained high blood and tissue levels together with supplementation using aureomycin, chloramphenicol or one of the streptomycins. Combinations with sulfonamide are best avoided since the latter may produce tuberculin type hypersensitivities (p 4169) including the syndromes of rheumatic fever and periarteritis nodosa.

Pneumococci: Almost all strains of pneumococci are remarkably penicillin sensitive. Supplementation is rarely required unless there is a superimposed or accompanying virus pneumonitis (p 4636); under such circumstance add aureomycin or chloramphenicol.

Meningococci: Although most meningococci are penicillin sensitive many clinicians prefer sulfonamide to penicillin as the antibiotic of choice because of the gravity of the infection. It is recommended that both antibiotics be used with supplementary aureomycin or chloramphenicol if necessary.

Gonococci *Gonococci* are remarkably penicillin sensitive rarely is supplementation required when needed aureomycin chloramphenicol streptomycin or sulfonamide can be added or substituted

B anthracis Anthrax is a grave disease that does not respond wholly satisfactorily to penicillin large initial doses are required high levels must be maintained and sustained for a considerable period of time Additional injections of antibacterial serum are required and supplementation with aureomycin or chloramphenicol if necessary

Cl tetanus Tetanus is a grave disease which does not respond satisfactorily to penicillin alone large initial doses are required high levels must be maintained and sustained during injection of large unitages of antitoxin

Cl perfringens Gas gangrene is a grave infection in which the results of penicillin therapy are far from satisfactory large doses must be deposited initially high concentrations must be maintained and sustained while massive unitage of antitoxin is injected simultaneously

Co diphtheriae Diphtheria is a grave infection which responds less than satisfactorily to penicillin large initial doses are required high levels must be maintained and sustained while massive unitage of antitoxin is injected simultaneously

Cl botulinum Botulism is a grave infection which responds less than satisfactorily to penicillin large initial doses are required high levels must be maintained and sustained while massive unitage of antitoxin is injected simultaneously

Erysipelothrix rhusiopathiae Erysipeloid responds specifically to penicillin supplementation is not required

Treponemes Most spirochetes are penicillin sensitive though resistant strains are encountered large initial doses are required with maintenance of high tissue levels for at least two or three weeks because of tendency of spirochetal diseases to relapse consider re treatment after a few weeks or months to obtain best results in syphilis framboesia pinta fusospirochetosis relapsing fevers and certain rat bite fever.

Psittacosis Penicillin results are less than satisfactory by contrast aureomycin and chloramphenicol appear definitively specific

Actinomyces In this and other systemic fungus invasions massive and sustained doses of penicillin are given as a desperation remedy in concert with vaccine sulfonamide and other antibiotics as indicated

E histolytica Combination of penicillin and amebacide is followed by fewer relapses than when specific is given alone since penicillin is not amebicidal better results are attributed to elimination of penicillin sensitive secondary invader permitting amebacide to function with greater efficiency superior results noted with aureomycin alone and in combination with amebacides

Penicillin and Other Antibiotics

The status of penicillin relative to other antibiotics may be summarized in the following statement.

- 1 For local use prefer bacitracin or tyrothricin
- 2 As against sulfonamide prefer penicillin Its lesser hazard counts

heavily in its favor against the toxicity and hyperallergenicity of sulfonamide (p 4179)

3 In the treatment of infections due to organisms sensitive alike to penicillin and to aureomycin-chloramphenicol choose penicillin. Currently costs are lower, ease of parenteral introduction assures greater uniformity of action, and self-treatment is discouraged.

4 In the treatment of infections sensitive alike to streptomycin and penicillin choose penicillin for its lesser toxicity.

5 For combined antibiotic effects prefer penicillin and aureomycin-chloramphenicol. The combination covers the bacterial spectrum easily and effectively. No known antibiotic-sensitive microbic invaders are omitted other than malarial parasites and trypanosomes.

Toxicity and Anti-Therapeutic Devices

Against the monumental therapeutic achievements of penicillin the threat of untoward responses is inconsequential. In point of fact much earlier reported toxicity was the result of impurities eliminated since introduction of crystalline penicillin, and others were due to the use of vehicles such as waxes now virtually obsolete.

Pharmacologic Toxicity

Penicillin has apparently no consistent pharmacologic toxicity. Amounts as great as 30 000 000 units a day have been given repeatedly without untoward responses.

Hypersensitivity Manifestations

Penicillin like every other protein molecule is capable of inducing allergic hypersensitivity reactions. Estimates of their frequency vary from a low of 2 per cent to a high of 15 per cent. The discrepancy between reports undoubtedly is due to the presence of many variables which include (a) impure earlier mixtures of amorphous penicillin before crystallization was accomplished, (b) antigenic responses to vehicles such as beeswax, white wax, peanut and sesame oil, (c) sensitivity to procaine in the currently popular crystalline salt of procaine penicillin G, (d) toxic manifestations due to other drugs given during the course of a serious illness.

Studying parenteral administration exclusively, Lepper and his colleagues (*J Clin Invest* 28:826, 1949) noted slightly over 1 per cent reactions using low or moderate doses of aqueous crystalline solutions but almost 3 per cent with an oil and beeswax menstruum. With high doses given for long periods the reactive rate rose to 7.8 per cent with aqueous crystalline solutions. Reactions were particularly frequent in patients with histories of previous allergy or prior exposure to penicillin.

Chronic Tuberculin type Hypersensitivity No instance of tuberculin type hypersensitivity has thus far been reported as the result of penicillin therapy. This clear record is in sharp contrast to that of sulfonamide

Gonococci Gonococci are remarkably penicillin sensitive rarely is supplementation required when needed aureomycin chloramphenicol streptomycin or sulfonamide can be added or substituted

B anthracis Anthrax is a grave disease that does not respond wholly satisfactorily to penicillin large initial doses are required high levels must be maintained and sustained for a considerable period of time. Additional injections of antibacterial serum are required and supplementation with aureomycin or chloramphenicol if necessary

Cl tetanus Tetanus is a grave disease which does not respond satisfactorily to penicillin alone large initial doses are required high levels must be maintained and sustained during injection of large unitages of antitoxin

Cl perfringens Gas gangrene is a grave infection in which the results of penicillin therapy are far from satisfactory large doses must be deposited initially high concentrations must be maintained and sustained while massive unitage of antitoxin is injected simultaneously

Co diphtheriae Diphtheria is a grave infection which responds less than satisfactorily to penicillin large initial doses are required high levels must be maintained and sustained while massive unitage of antitoxin is injected simultaneously

Cl botulinum Botulism is a grave infection which responds less than satisfactorily to penicillin large initial doses are required high levels must be maintained and sustained while massive unitage of antitoxin is injected simultaneously

Erysipelothrix rhusiopathiae Erysipeloid responds specifically to penicillin supplementation is not required

Treponemes Most spirochetes are penicillin sensitive though resistant strains are encountered large initial doses are required with maintenance of high tissue levels for at least two or three weeks because of tendency of spirochetal diseases to relapse consider retreatment after a few weeks or months to obtain best results in syphilis frambesia pinta fusospirochetosis relapsing fevers and certain rat bite fevers

Psittacosis Penicillin results are less than satisfactory by contrast aureomycin and chloramphenicol appear definitively specific

Actinomycosis In this and other systemic fungus invasions massive and sustained doses of penicillin are given as a desperation remedy in concert with vaccine sulfonamide and other antibiotics as indicated

E histolytica Combination of penicillin and amebicides is followed by fewer relapses than when specific is given alone since penicillin is not amebicidal better results are attributed to elimination of penicillin sensitive secondary invaders permitting amebicide to function with greater efficiency superior results noted with aureomycin alone and in combination with amebicides

Penicillin and Other Antibiotics

The status of penicillin relative to other antibiotics may be summarized in the following statements

- 1 For local use prefer bacitracin or tyrothricin
- 2 As against sulfonamide prefer penicillin Its lesser hazard counts

comparable bactericidal activity but do not use sulfonamide. Prefer aureomycin or chloramphenicol if possible.

5 If the history of sensitivity is positive but skin test is negative proceed with penicillin therapy but give a prophylactic injection of 5 cc of 1% benadryl (50 mg) at least fifteen to twenty minutes before depositing antibiotic.

6 If patient gives a definite history of hypersensitivity to prior use of penicillin try to avoid administration of offending allergen. Preferably substitute aureomycin or chloramphenicol.

7 If penicillin must be used desensitize as with other allergens. Inject a 1/1000 solution intracutaneously and increase the dose from 0.1 to 1 cc if possible using increments of 0.1 cc every ten to fifteen minutes. Repeat with 0.1 cc of 1/100 solution and try to work up to appreciable unitage by slow degrees meantime forcing antihistamines.

Bacterial Resistance

The development of active immunity by micro-organisms as the result of antibiotic therapy attests again to the ingenuity of the foes of man. Bacterial resistance or fastness is commonly exhibited to sulfonamides (as for example by gonococci) and to streptomycin (by tubercle bacilli). Bacterial resistance to penicillin most often has been encountered in streptococcal and staphylococcal invasions. For this reason it is wise to give massive priming doses so that both highly sensitive and more resistant strains of invading micro-organism are immobilized and to continue treatment for a prolonged period of time so that isolated nests of lurking insensitive bacteria in relatively remote tissue areas are finally overcome.

Herxheimer Reactions

The Jarisch-Herxheimer reaction occurs in the treatment of many diseases but most particularly in syphilis. Following first injection of therapeutic agent whether arsenical or penicillin there is noted a febrile reaction often with intensification of pre-existent symptomatology.

Herxheimer reactions have been reported as the result of penicillin therapy particularly in chronic brucellosis and in late syphilis both cardiovascular and neurologic. A febrile Herxheimer reaction was observed in 34 per cent of 349 patients with various types of neurosyphilis. Simultaneously there was increase in the numbers of cells of the spinal fluid and in its protein content.

For prevention of Herxheimer reactions the following precautions are suggested:

1 precede penicillin therapy of cardiovascular or neurologic syphilis by 6 to 10 injections of bismuth subsalicylate (p 4255).

2 start with initial injections of penicillin not to exceed 10 mg per kilo (700 units for the average adult weighing 150 lbs.) Increase dose to 1 000 2 000 5 000 10 000 50 000 and 100 000 units.

3 preceding and concurrently with penicillin therapy use antihistamine at first parenterally and later orally.

which has demonstrably produced lesions of rheumatic fever and periarthritis nodosa in experimental animals and presumably in the human (p 4169)

Acute Histamine type Hypersensitivities Penicillin may cause any of the long list of acute histamine type hypersensitivity manifestations (p 4167) Most often these occur locally at the site of a topical application less frequently the allergic reaction is a post absorptive response

In approximately 5 to 15 per cent of patients local application of a penicillin product is followed sooner or later by some variety of contact dermatitis (p 4297) This may take the form of erythema localized pruritus vesicular pustular or exfoliative reaction urticaria or angioneurotic edema Similar reactions may occur in the conjunctiva following use of ophthalmic ointment or of drops containing antibiotic Oral products particularly troches and tablets may result in serious topical manifestations since the resulting glossitis angioneurotic edema of the tongue uvula pharynx or larynx may cause obstruction to respiration Intrathecal instillations may produce aseptic meningitis with pleocytosis and accompanying malaise headache dizziness vertigo nausea vomiting muscle spasms and in extreme instances convulsions or coma

The frequency of histamine type manifestations following local or topical application of penicillin products is the basis for recommendation that administration of penicillin be limited to parenteral introduction Bacitracin or tyrothricin which have somewhat similar antibacterial properties may be substituted locally since neither of these products is seemingly as allergenic as penicillin and neither can be given parenterally because of inherent toxicity

Postabsorptive histamine type hypersensitivity manifestations of penicillin resemble those produced by other allergens They include diffuse morbilliform scarlatiniform erythematous vesicular bullous and exfoliative eruption urticarias angioneurotic edema eosinophilia arthropathy nausea and vomiting abdominal cramps malaise headache drug fever dizziness vertigo muscle twitching convulsions and loss of consciousness etc

Prevention and Treatment of Hypersensitivity Reactions Prevention and treatment of hypersensitivity due to penicillin may be accomplished by obedience to the following tenets

1 Avoid local and topical uses of penicillin Substitute bacitracin or tyrothricin if possible

2 Do not prescribe or administer penicillin until a history of hypersensitivity has been taken (p 4187)

3 Even if there is no history of hypersensitivity give prophylactic doses of antihistamine concurrently with penicillin and for two weeks after cessation of antibiotic Prescribe 200 mg daily of pyribenzamine or benadryl (p 4216)

4 If patient gives history of hypersensitivity to antigens other than penicillin perform a penicillin skin test before making therapeutic injection If the skin test is positive substitute products of other manufacturers If these are allergenic consider use of another antibiotic of

respiratory tract kidneys nervous system and eyes (p 1028) particularly if associated with generalized dermatoses and an eosinophilic leukocytosis

5 Get history of previous hypersensitivity (p 4187) Note exposure to infection or drug allergens particularly sulfonamides dilantin aspirin and other analgesic antipyretics hypnotics etc

6 To establish diagnosis do not hesitate to biopsy nodule infiltrated vessel or indurated muscle

7 Institute therapy with antihistamines using daily doses approximating 800 mg of pyribenzamine or benadryl

■ Until preparations are commercially available make application for cortisone to Merck and Co Rahway N J or to Dr Chester S Keefer Chairman National Academy Allocation Committee 2101 Constitution Ave Washington D C for ACTH to Dr John R Mote Armour and Co Chicago Illinois Meantime make clinical trials of artisone (Wyeth) and percorten (Ciba) purchasable in the open market. In the use of the latter inject 1 cc intramuscularly (equivalent to 5 mg desoxycorticosterone) followed within five minutes by intravenous introduction of 10 cc of 10% ascorbic acid (1 gm) Unless prompt and dramatic improvement is noted with artisone and percorten—ascorbic acid abandon therapy after three or four consecutive daily injections

■ Avoid administration of any potential allergen and particularly of sulfonamide

PERIODIC DISEASE

Principles of Diagnosis and Therapy

1 Hobart Peiman (J A M A 141 175 1949) has collected a remarkable group of patients who suffered periodic but benign febrile disorders over the course of many years

2 In general the syndromes arranged themselves in four groups including periodic fever periodic abdominalgia (benign paroxysmal peritonitis) periodic or psychic neutropenia and periodic or intermittent arthralgia

3 In addition to the main groups there were also certain forms of anaphylactoid purpura angioneurotic edema and periodic paralysis

4 Despite the numbers of attacks none of these patients suffered inroads on their general health All were otherwise in excellent physical condition

5 The cause for periodic disease is presently unknown The several theories that have been advanced include unknown infection allergic hypersensitivity endocrinologic imbalance migraine and epilepsy Reimann regards these theories as inadequate and suggests that until further knowledge is attained it is simplest to regard periodic disease as a manifestation of the rhythm of life

6 Periodic disease is never recognized in an initial episode Later

PENICILLIOSIS

The penicilliosis mold is capable of producing otomycosis (p 3305) and pulmonary abscesses (Fig 506 p 2213) resembling those resulting from aspergillosis infections

Treatment is conducted in the manner outlined for the latter (p 4241)

PENTAQUINE (SN 13276)

Pentaquine 6-methoxy-8-(5-isopropyl-amino-amyloamino) quinine monophosphate has earned a present niche in the treatment of malaria through its efficacy in synergistic combination with quinine in the treatment of relapsing vivax infections refractory to chloroquine and chloroguanide (p 4398)

Available Products

Pentaquine Phosphate (Abbott) Tablets 10 mg of pentaquine base containing 13.3 mg of pentaquine phosphate

Pentaquine and Quinine (Abbott) Tablets of 18 mg of former and 0.3 gm quinine sulfate

Therapeutics

In the treatment of relapsing vivax infections the undernoted routine approximates 100 per cent cure

Pentaquine 10 mg and quinine sulfate 0.5 gm three times daily for fourteen days. Pentaquine should not be given to children and must be used cautiously in adults that are not light skinned

Toxicity

See Quinine (p 4486)

PERI ARTERITIS NODOSA

Principles of Diagnosis and Therapy

1 Regard periarteritis nodosa as a chronic tuberculin type allergic hypersensitivity with essential changes in peripheral vascular system (Fig 225 p 1028)

2 Note accompanying changes throughout mesenchymal collagen tissues

3 Observe increase in incidence of periarteritis nodosa at autopsy since introduction of sulfonamide therapy. Necrotic nonfatal examples have been observed

4 Suspect periarteritis nodosa in all instances of abacterial protracted pyrexia with diffuse manifestations involving peripheral vessels

AVAILABLE PERTUSSIS VACCINES

| Product | Billions H. pertussis per cc | Remarks |
|--|------------------------------------|---|
| Pertussis Vaccine (Squibb Upjohn) | 10 | 6 cc for full immunization |
| Pertussis Vaccine (Parke Davis Wyeth) | 15 | 4 cc for full immunizing dose |
| Pertussis Vaccine (Cutler National Drug Squibb Sharp & Dohme) | 20 | 3 cc for full immunizing dose |
| Pertussis Vaccine Alum Precipitated (Sauer Parke Davis) | 30 | 2 cc for immunizing dose Preparation of choice for single immunization. |
| Pertussis Vaccine Alum Precipitated, Diphtheria Toxoid Alum Precipitated Combined (Upjohn Sharp & Dohme) | 19 | 6 cc for full immunizing dose |
| Pertussis Vaccine Diphtheria Toxoid Combined (Parke Davis) | 15 | 4 cc for full immunizing dose |
| Pertussis Vaccine Diphtheria Toxoid Alum Precipitated Combined (National Drug) | 30 | 2 cc for full immunizing dose Preparation of choice for double immunization. |
| Pertussis Vaccine Alum Precipitated, Diphtheria Toxoid, Alum Precipitated Tetanus Toxoid Alum Precipitated Combined (National Drug Squibb) | 30 | Preparation of choice for triple immunization |

Practical Management

Prophylaxis

1 Favor active immunization preferably before the age of six months. Introduce at least 45 million organisms in three injections at intervals of four to six weeks. For routine use advocate triple immunization with diphtheria toxoid (alum precipitated) tetanus toxoid (alum precipitated) pertussis vaccine. Note variation in bacterial count of available pertussis vaccines (p 4463). Supplement triple vaccine if necessary with plain pertussis vaccine to bring total pertussis bacterial count to 45 billion organisms.

2 For booster doses every two or three years in early life and at five year intervals in later life or upon contact introduce 10 to 15 billion organisms preferably using the Parke Davis preparation of which 1 cc contains 30 billion H. pertussis phase I (Sauer strain) alum precipitated.

3 For protection of those heavily exposed in the lag period between injection of vaccine and development of a high antibody titer choose between chemoprophylaxis and passive immunization with convalescent human blood or heterologous rabbit serum. On all counts prefer chemoprophylaxis with aureomycin or chloramphenicol in amounts approximating 25 mg per kilogram of body weight per day (1.75 gm for average adult weighing 150 pounds).

if all other obvious etiologic factors can be eliminated and repeated episodes are observed with complete recovery the diagnosis may be suspected

7 Without factual experience it is suggested that antihistamine be administered in daily oral doses of at least 200 mg of pyribenzamine or benadryl (p 4216)

PERTUSSIS

[Whooping Cough]

General Principles of Diagnosis and Therapy

1 The importance of whooping cough is vastly underrated in clinical medicine. Thus for example the case fatality rate in infants under the age of one year is 25 per cent and 50 per cent of all deaths in the first six months of life occur as the result of whooping cough (p 278)

2 The indifference of the lay public to whooping cough is all the more deplorable since effective agents are available for active and passive immunization and for specific antibiotic therapy of acute phases of the disease

3 It should not be necessary to wait for the characteristic paroxysmal cough. The astute parent or physician recognizes pertussis in the catarrhal stage when the patient has merely a persistent irritating non-productive cough and a leukocytosis with a predominance of lymphocytes. At this time the clinical suspicion may be substantiated by growth of characteristic colonies on cough plates (Fig 40 p 281)

4 For active immunization there are available several pertussis vaccines prepared from phase I organisms. These may be plain or alum precipitated; they may be combined with diphtheria and/or tetanus toxoid for double or triple immunization (Table p 4362)

5 For passive immunization the Council on Pharmacy has approved a pertusis hyperimmune homologous serum NNE commercially available as Hypertussis (Cutter) in vials containing 2.5 cc. In addition the Philadelphia Serum Exchange of 1740 Bainbridge Street Philadelphia 46 Pennsylvania supplies vials containing 20 cc of human lyophilized pertussis immune serum prepared from healthy adults recently recovered from pertussis or recently immunized with phase I vaccine. Finally there is a commercially available heterologous (rabbit) hyperimmune antipertussis serum (Squibb Wyeth). This is marketed in vials containing 4 cc with diluted normal rabbit serum for performance of sensitivity tests (p 555). The dose of anti-pertussis serum is 4 cc intramuscularly repeated after twenty-four hours if necessary.

6 Besides products for active and passive artificial immunization *H. pertussis* is sensitive to streptomycin, aureomycin, chloramphenicol, aerosporin and polymyxin. With this formidable array of anti-infective agents there seems no valid excuse for pertussis to threaten the children of any civilized community.

For passive immunization of non sensitive or desensitized allergenic patients deposit 4 cc intramuscularly Repeat after twenty four hours if necessary

14 If paroxysms continue for more than a few days and general nutrition suffers consider setting up an intravenous drip for delivery of protein hydrolysate plasma whole blood and antibiotic

PHYSICAL ALLERGY

Physical allergies due to heat cold and solar energy are being recognized with increasing frequency (p 552) Therapeutic objectives in the management of these allergic hypersensitivities include elimination of the ensuiting modality (p 4176) use of sunburn protections (p 3140) in the photosensitive desensitization (p 4191) psychotherapy (p 1316) and palliation or prophylaxis with antihistamines and adren ergens (p 4212)

PINTA

Principles of Diagnosis and Therapy

- 1 Pinta as other treponematoses yields to arsenicals and penicillin The latter is much preferred because of its lesser toxicity
- 2 As in the case of frambesia (yaws) principal clinical manifestations of pinta are tegumentary (Figs 51 and 52 p 354)
- 3 Because of its relatively benign clinical course pinta is treated more in the manner of frambesia than of syphilis A similar penicillin dosage schedule is suggested (p 4558) reserving mapharsen for the penicillin resistant
- 4 Since serologic reversal may be considerably delayed the efficacy of treatment should not be evaluated until a lapse of at least three months

PITYRIASIS ROSEA

Principles of Diagnosis and Therapy

- 1 Pityriasis rosea is a generalized dermatosis (Fig 1000 p 3411) that is benign and self limited
- 2 Local therapy is ineffectual As a matter of fact overenthusiastic management may lead to treatment dermatitis more discomforting than the original dermatosis
- 3 On the hypothesis that pityriasis rosea is a hypersensitivity manifestation prescribe antihistamines Suggest oral doses of 200 mg daily of pyribenzamine or benadryl If these preparations do nothing else they allay pruritus

Immediate Care

1 For communal prophylaxis isolate the patient with pertussis particularly in the pre paroxysmal stage

2 Give a priming dose of 50 to 100 mg per kilogram of body weight of aureomycin or chloramphenicol (35 to 7 gm for average adult weighing 150 pounds) Approximate the lower dosage with aureomycin and the higher with chloramphenicol Suggest that the patient take 2 products every few moments with large amounts of water milk fruit juice tea or bouillon to avoid gastric irritation

3 For infants and children unable to swallow antibiotic improvise a solution or suspension in physiological saline Instill rectally with a catheter and funnel meanwhile pressing the buttocks to prevent expulsion

4 Should it be impossible to introduce antibiotic orally or rectally inject 100 mg aureomycin hydrochloride intravenously in the diluent supplied by the manufacturer Alternatively deposit intramuscularly 1 gm streptomycin

5 Whichever antibiotic is used continue daily maintenance doses equal to the priming dose Divide into 4 equal portions and give at 6 hour intervals by whichever route is tolerated

6 Concurrently with antibiotic and for a period of at least two weeks after the final dose prescribe daily prophylactic antihistamine using 200 mg of pyribenzamine or benadryl in 4 divided amounts

7 Place infant or older child who is desperately ill in an oxygen tent until infection is controlled by antibiotics

8 In severe illness with thick tenacious secretion attempt aspiration of pharynx and trachea with a soft rubber catheter preferably connected to an electrically driven suction apparatus

9 Time honored cough mixtures expectorants and particularly the nauseants do harm and no good in the control of paroxysms Antispasmodics possess no significant value and may add to patient discomfort through drying of the throat

10 For control of cough choose hycodan bitartrate (p 4416) in the adult dose of 5 mg (1/12 grain) Repeat every four to six hours as needed Avoid codeine and morphine because of side effects (p 3860)

11 Aerosporin and polymyxin reported as beneficial in the treatment of pertussis are not commercially available Each of these products is nephrotoxic In all likelihood neither is any more effectual than aureomycin or chloramphenicol

12 For supplementation of antibiotic if needed obtain hyperimmune human pertussis serum II Hypertussis (Cutter) is available inject intramuscularly 25 cc Repeat at 24 and 48 hour interval if necessary If human lyophilized serum can be gotten from the Philadelphia Serum Exchange deposit 5 cc intramuscularly every six to twelve hours for three or four doses Since each of these products is prepared from homologous serum hypersensitivity phenomena need not be feared

13 In desperation resort to heterologous pertussis hyperimmune antiserum derived through immunization of rabbits Make ophthalmic and skin tests with diluted normal serum supplied by manufacturer

second dose of 1 cc seven to ten days later For booster doses repeat 0.5 to 1 cc as needed preferably biannually

Immediate Care

1 Because of the infectivity of the disease transfer the plague infected patient to a hospital particularly equipped for the care of infectious diseases Notify public health authorities

2 Institute general measures for control of the infected patient (p 67)

3 Warn contacts and nursing attendants of the dangers of the disease Suggest active immunization for long term immunity and chemoprophylaxis for protection during lag period between inoculation and development of a sufficiently high titer of antibody For latter purpose prescribe 2 gms daily of sulfadiazine or sulfamerazine

4 Regard sulfadiazine as the drug of choice in the treatment of plague (Platzer U.S. Naval Med Bull 46 1674) Give a large priming dose orally or intravenously By latter route inject 2.5 gm each of sodium sulfadiazine and sodium sulfamerazine in at least 200 cc of diluent preferably molar lactate For oral priming dose give 3 to 4 gm each of sulfadiazine and sulfamerazine with a teaspoonful of bicarbonate of soda

5 Four hours after priming dose of sulfonamide has been administered start maintenance dose using 0.5 to 1 gm each of sulfadiazine and sulfamerazine at 4 hour intervals Try to deliver 12 to 30 gm of soluble sulfonamide on the first day of treatment provided that toxic manifestations are not encountered

7 Because of the gravity of the disease combine soluble sulfonamide with streptomycin Make an initial priming intramuscular deposit of 1 to 2 gm continue with 0.5 to 1 gm at 8 to 12 hour intervals as needed

8 Watch for reports of the efficacy of aureomycin and chloramphenicol in the treatment of plague Prepare to substitute either of these non toxic and potent antibiotics for either or both of the products presently advised Because of gravity of plague approximate 100 mg per kilogram (7 gm for average adult weighing 150 pounds) for priming and daily maintenance doses

9 Concurrently with sulfonamide, streptomycin give oral antihistamines using 200 mg of pyribenzamine or benadryl daily Continue for at least two weeks after the last dose of antibiotic has been administered

10 Tried and found wanting are a variety of therapeutic agents including mercurochrome mercuric phenylate iodides resorcinol mercuric trypan blue quinine arsenicals methylene blue formalin germinin (suramin) merthiolate bacteriophage and penicillin

11 In countries in which unofficial plague antibacterial serum is available injections may be attempted in the patient who is desperately ill or antibiotic resistant After appropriate determinations of sensitivity and desensitization if necessary introduce intramuscularly or intravenously twenty to forty cc Repeat every six eight or twelve hours as necessary

PLACENTAL IMMUNE GLOBULIN

Human immune globulin derived from extract of placentas is used in the prophylaxis of measles when gamma globulin cannot be obtained

Available Products

Human Immune Globulin (Placental Extract) U S P (Lederle Sharp & Dohme Wyeth)

Therapeutics

For prevention or modification of measles inject intramuscularly 2 to 10 cc Repeat after twenty four to forty eight hour Since human immune globulin of placental origin is a homologous preparation hypersensitivity tests need not be done

PLAGUE

[Bubonic Plague Black Death]

Principles of Diagnosis and Therapy

1 A reservoir of sylvatic plague still exists in flea wild rodents ground squirrels gerbilles marmots and cavies (guinea pigs) The reservoir of human plague persists in house rat sewer rats and ground squirrels (Fig 46 p 320)

2 Plague is transmitted from rodent to rat flea the insect vector and from either of the e reservoirs to man (p 321) Human plague is still encountered in the United States The majority of infections are seen in California but other persistent nests of plague exist in Louisiana Florida Texas and New Mexico

3 Plague may be successfully prevented by active immunization using heat or phenol killed suspensions of *P. pestis*

4 Clinical plague may be actively treated with antibiotics Thus far there has been greatest experience with sulfadiazine and streptomycin By analogy with other infections produced by Pasteurellae notably tularemia it may be expected that aureomycin and/or chloramphenicol will prove equally valuable and less toxic

Practical Management

Prophylaxis

1 Through use of rodenticides (Antu) and insect repellents (DDT etc p 4373) attempt to clear area of vectors

2 For active immunization of contacts and those who plan to visit an area in which plague is endemic induce active immunization with plague vaccine (Cutter) U S P a sterile solution of *P. pestis* each cc containing 2 billion organisms Inject subcutaneously 0.5 cc Give a

3 Except for pneumococcal conjunctivitis and upper respiratory infections do not rely solely on local therapy For topical use in conjunctivae prefer bacitracin or tyrothricin solutions or ointments Do not hazard sensitization to sulfonamide or penicillin If infection is persistent substitute aureomycin ophthalmic solution and ointment For upper respiratory infections try aerosolization with bacitracin in chloresium

4 In all other pneumococcal infections resort to parenteral introduction of antibiotic Prefer penicillin Inject a loading dose of 600 000 units of crystalline procaine penicillin G in aqueous or oil suspension Maintain antibiotic levels with a similar daily dose injected intramuscularly

5 Concurrently and for two weeks after last dose of antibiotic give prophylactic antihistamine therapy using 200 mg daily of pyribenzamine or benadryl in 4 divided doses

Continuing Care (Unfavorable Course)

1 In overwhelming or persistent infections in bacteremia and in pneumococcal meningitis suspect presence of an undrained feeding focus of diminished patient resistance and/or of increased organism virulence (type III)

2 Obtain specimen for bacteriologic study Identify organism and its subclassification Look for other invading microbes particularly tubercle bacilli fungi and klebsiellas

3 Summon consultant otolaryngologist Particularly look for evidences of sphenoiditis otitis media mastoiditis or sinus thrombosis (p 1447) Prepare for surgical intervention if indicated

4 With diminished patient resistance introduce protein hydrolysate plasma or whole blood

5 Under any circumstance increase level of antibiotic Set up an intravenous drip Introduce massive doses up to 1 million units of crystalline potassium penicillin G in saline every two hours

6 Supplement penicillin with aureomycin or chloramphenicol If stomach is tolerant give immediate loading and daily maintenance doses approximating 100 mg per kilogram of body weight (7 gm for average adult weighing 150 lbs) If stomach is intolerant introduce aureomycin hydrochloride intravenously using 100 to 500 mg of the preparation particularly devised for intravenous use

7 If patient is sensitive to penicillin and/or intolerant of aureomycin and chloramphenicol substitute soluble sulfonamide For intravenous loading and daily maintenance doses give 2.5 gm each of sodium sulfadiazine and sodium sulfamerazine in 200 cc of diluent preferably molar lactate For oral administration give 2.5 gm each of sulfadiazine and sulfamerazine with one teaspoonful of bicarbonate of soda During sulfonamide therapy carefully observe urine and blood for manifestations of drug toxicity

8 With sulfonamide therapy increase dose of antihistamine to 400 mg daily

12 In the era that preceded antibiotic therapy human serum obtained from recent convalescents was highly regarded by those with experience in the treatment of plague. Intramuscular injections of 10 to 20 cc repeated after twenty four or forty eight hours were recommended.

PNEUMOCOCCAL INFECTIONS

Principles of Diagnosis and Therapy

1 Pneumococci are normal inhabitants of the upper respiratory passages (p 200)

2 Any of the thirty three or more recognizable subtypes of pneumococcus may cause a wide variety of infection, including acute rhinitis, nasopharyngitis, accessory nasal sinusitis, tonsillitis, tracheobronchitis, pneumonitis, lobar pneumonia, pleuritis, conjunctivitis, otitis media, mastoiditis, otogenic and rhinogenic meningitis, pneumococcemia, bacterial endocarditis, osteomyelitis, arthritis and peritonitis.

3 Except in lobar pneumonia clinical manifestations of pneumococcal infection are not pathognomonic (p 2171). Hence the diagnosis requires bacteriologic identification of the invading microbe (Fig 22 p 202).

4 Active immunization against the pneumococcus has never proven practicable despite many praiseworthy efforts using pneumonia vaccines combined (Parke Davis) pneumococcus antigen (Lilly) and pneumococcus polysaccharides type specific (Squibb).

5 Pneumococci are strikingly sensitive to penicillin, aureomycin, chloramphenicol, sulfonamides, bacitracin and tyrothricin.

6 Passive immunization with type specific antipneumococcal heterologous serum (equine rabbit) has been rendered obsolete through the response of the pneumococcus to more effectual and less toxic antibiotics.

Practical Management

Prophylaxis

1 For temporary protection after massive exposure to pneumococci order chemoprophylaxis with oral penicillin. Prescribe 250,000 units of crystalline potassium penicillin G in tablet form every six to eight hours for a period of two days or substitute 2 gm daily of sulfadiazine or sulfamerazine in 4 divided doses each given with one teaspoonful of bicarbonate of soda.

Immediate Care

1 Institute general measures required for management of the infected patient (p 67).

2 Attempt to isolate bacterium from sputum, blood or cerebrospinal fluid. Remove just enough of the latter to obtain a specimen.

8 The first or prodromal period of systemic invasion is non specific. Usually it is not recognized except in immediate contacts. Presenting symptoms include sore throat, nausea, vomiting, fever, and malaise. Physical examination is not revealing. Demonstrations of virus or of increase in antibody titer of serum are impractical since even under optimum circumstances laboratory reports cannot be made available until the patient has recovered or succumbed to the disease.

9 In all likelihood few of those infected by the poliomyelitis virus progress beyond the systemic phase. Quite likely prodromal, abortive, or inapparent infections confer a naturally acquired active immunity that is as effective as a paralytic attack.

10 If this huge reservoir of benign infections is included in statistical studies, poliomyelitis may be regarded as an invasion with a high morbidity, an extremely low mortality, and relatively infrequent significant sequels. If on the other hand this huge reservoir of infection is ignored, then the disease has a relatively low morbidity, a considerably higher mortality, and a proportionately higher rate of significant sequels. Unless enthusiasts for specific types of therapy recognize the strong tendency to spontaneous recovery in poliomyelitis, they are apt to find their claims challenged by objective scientists more familiar with the natural history of the disease. (Report of Subcommittee on Poliomyelitis, JAMA 140:534, 1949).

11 The second phase or free interval between systemic and meningeal manifestations may be definitive or relatively inapparent. In the most fortunate, the free interval is continued indefinitely. In the less fortunate, systemic manifestations subside, then, after freedom from discomfort for several days, evidences of meningeal irritation develop. In fulminating invasions, the free interval is not clearly defined, and evidences of meningeal irritation overlap systemic manifestations.

12 The importance of recognizing the free interval is reflected in the influence of management during this period on the future course of the disease. It is quite possible that continued rest, through and following the free period, may actually prevent or mitigate meningeal and neurologic manifestations. It is also possible that non-specific factors during the free interval, such as fatigue, anxiety, ambulation, or surgical intervention (tonsillectomy), may initiate or favor meningeal or neurologic sequels. (Horstmann, JAMA 142:236, 1950).

13 The third phase or stage of meningeal irritation (p. 460) may never occur; it may overlap the prodromal period, or it may be noted after the free interval. The course of the meningeal phase also is subject to variation in that it may subside without paralysis, or it may progress to transient or permanent paralysis.

14 Excluding abortive infections, statistical studies of those who progress to the recognizable meningeal phase of disease suggest that the fatality rate in poliomyelitis is probably less than 1 per cent, and that not more than 2 per cent of survivors suffer significant permanent paralysis. These calculations have importance to the therapist who must demonstrate significantly better results before laying claim to specificity of recommended forms of treatment. They have impor-

9 Except for diagnosis avoid lumbar puncture Do not give intrathecal therapy for reasons elsewhere outlined (p 4409)

10 Despite justifiable reliance on antibiotic therapy do not neglect supportive measures (p 2182) nonspecific medication (p 2183) and oxygen therapy (p 2184) particularly in lobar pneumonia (Fig 496 p 2175)

POLIOMYELITIS

[Acute Anterior Poliomyelitis Infantile Paralysis
Heine Medin's Disease]

Principles of Diagnosis and Therapy

1 Poliomyelitis is one of many viral infections resulting in non suppurative encephalo myelo meningitis (p 442)

2 The specific virus may be isolated from upper respiratory passages and/or from stools The disease apparently is transmitted from person to person and/or by human fecal contamination So far as is known there is no insect vector both the common house fly and cock roaches having been exonerated

3 Poliomyelitis virus has been grown artificially Three immunologic subvarieties already have been identified Despite this progress vaccine is not yet available for artificial active immunization

4 Quite likely a single attack of poliomyelitis confers permanent immunity at least to the individual invading strain Quite likely also those who appear naturally resistant to the disease have actually developed active immunity from an unrecognized nonparalytic attack of the infection

5 The lesions of poliomyelitis are much more extensive than formerly believed Encephalograms show cerebral changes in all patients In fatal cases diffuse encephalitic lesions are demonstrable with destructive processes regularly present in vestibular and cerebellar nuclei Histologic studies suggest that involved nerve cells not destroyed during acute stages of the disease recover spontaneously in one month or less This demonstration of the healing power of nature requires consideration in any evaluation of therapeutic procedure

6 Clinically the course of infantile paralysis may be divided into I a systemic prodromal phase II a free interval III a period of recognizable meningeal irritation and IV a stage of paralysis involving trunk extremities or structures innervated by bulbar nerves Uneventful recovery may and usually does follow prodromal and meningeal phases and clinical experiences bear out histopathologic evidences of the powerful tendency to spontaneous recovery exhibited by damaged nerve cells

7 Enunciation of principles of management is made difficult by the protean manifestation of the disease overlap of described phases and the rarity with which the practitioner observes his patient from the onset of invasion (p 459)

tainly of no value. However aureomycin and chloramphenicol are virucidal and while they have not proven significantly successful in the treatment of poliomyelitis they merit trial for probatory anti-infective therapy. Neither product has serious toxic potential both can be given orally if they do nothing else they may be counted on to prevent or alleviate secondary infection due to sensitive microbes. Combined serum and antibiotic therapy may be carried out without significant discomfort or hazard to the patient admittedly at great and perhaps wasteful expense.

21 Preliminary experiences with ACTH are disappointing

Practical Management

Prophylaxis

1 Consider passive immunization by intramuscular injection of 10 to 20 cc of human convalescent serum (Hyland). If this product is not available substitute gamma globulin or human placental extract. Of these latter use 20 cc deposited intramuscularly.

2 Consider administration of aureomycin or chloramphenicol if for no other reason than to protect against secondary pulmonary invaders. Give large doses since the virus is relatively insensitive at best. Approximate an oral dose of 100 mg per kilogram of body weight (3.5 gm for the child weighing 75 lbs).

3 Warn contacts to avoid droplet infection from nose and throat or stool contamination.

Immediate Care (Abortive, Paralytic and Nonparalytic Invasions)

1 Unless there are definite evidences of weakness, paralysis or excessive toxicity try to care for the child at home. Hospitalization requires transportation with resultant excitement, fatigue and strange surroundings that may favor progression to meningeal and paralytic phases of the disease. Contrariwise reassurance, home comfort, easing of tension and prolonged bed rest favor arrest of the disease without significant sequelae.

2 Whether in hospital or home institute general measures used for management of the infected patient (p. 67).

3 Emphasize the favorable aspects of poliomyelitis in order to allay the panic reaction which accompanies each suspected infection.

4 Maintain fluid and metabolic requirements by ordering palatable foods such as ice cream, lollipops, candy, cold drinks, sweetened beverages, fruit juices, etc.

5 Notify health authorities. Suggest a round table consultation at this time with pediatricist or internist especially experienced in the management of infantile paralysis together with orthopedist and physiotherapist. If necessary seek assistance of the National Foundation for Infantile Paralysis.

tance also to parents whose anxiety may be allayed by the mathematically long odds favoring survival without sequel

15 In only a statistically small number of patients are significant paralytic manifestations encountered. The fourth or paralytic phase may run concurrently with the meningeal phase or it may follow it. Of non bulbar cases approximately 10 per cent have involvement of arms alone, 50 per cent of legs alone, and the remainder of both legs and arms with or without involvement of the trunk. Mortality in non bulbar poliomyelitis is rare.

16 Paralyzes usually reach a maximum on or about the fifth day. In the majority of instances involved nerve cells recover spontaneously, an observation that requires consideration in evaluations of specific therapeutic measures. Spontaneous improvement however rarely proceeds after the first month so that improvements noted after this time may be credited to the therapist with a high degree of certainty.

17 It is in the bulbar form of poliomyelitis that death is most likely to occur. In these patients there is involvement of ninth, tenth, eleventh and twelfth cranial nerves. Clinically bulbar involvement is recognized through regurgitation of fluid through the nose, loss of gag reflex, change in the character of the voice, the patient developing a "hot potato" type of speech, weakness of the palate with deviation to the unparalyzed side when the patient says "Ah", pharyngeal weakness, deviation of tongue on protrusion, difficulty in swallowing, mechanical obstruction to breathing due to paralysis of vocal cords, respiratory distress as evidenced by recurrent cyanosis, laryngeal stridor and coarse rales, excitement and unmanageability causing the patient to resist pharyngeal aspiration, elevation of temperature to the high level of 103° F or more, greater toxicity, stupor of sufficient degree to make the patient oblivious of the accumulation of secretions in his airway, inability to cough effectively, pharyngeal pooling of mucus and the presence of leukocytosis when secondary infections occur particularly in the lungs.

18 Specific therapy of poliomyelitis is currently disappointing. As previously stated, induction of artificially active immunity is presently not much more than a hope, and for available agencies for passive immunization and anti-infective effects there are no statistical evidences suggesting great potency.

19 A convalescent antipoliomyelitis serum (Hyland) is commercially available. The product is obtained from pooled blood of donors recently recovered from the disease. The recommended dose is 10 to 20 cc deposited intramuscularly and repeated daily or every second day for 2 or 3 injections if necessary. This homologous product merits consideration only for want of something better to do. If serum therapy accomplishes nothing else, it gives anxious parents the feeling that something is being done without exposing the child to a toxic product.

20 Of available antibiotics, none has demonstrable specific efficacy in poliomyelitis. Sulfonamides, streptomycin and penicillin are cer-

weakness or faintness) If priscol cannot be accepted orally give subcutaneous or intramuscular injections of 1 to 2 cc of the commercially available solution (25 mg per cc) at 4 hour intervals

14 As a substitute for sympatholytics cautiously inject cholinergic neostigmine in a probatory dose of 0.5 cc of 1:4000 solution. If this amount is ineffectual increase the dose to 1 cc repeated at intervals of four hours if necessary. Enthusiastic reports of the innovators (Kabat and Knapp 1943) have not been substantiated by other investigators.

15 Other muscle relaxants (intravenous procaine and curare) are too hazardous for use by the practitioner in the home. As in tetanus intravenous infusions of 0.1% procaine may jeopardize both respiratory and circulatory systems and intramuscular deposits of Purified Chondrodendron Tomentosum Extract (Intocostin Squibb) enthusiastically advocated by Ransohoff (JAMA 129:129 1945) are not recommended by Fox (JAMA 131:278 1946) who found no objective improvement in thirty-four patients treated with curare and who emphasizes the dangers of its action on respiratory mechanisms (p. 4421).

Continuing Care (Favorable Course Free Interval)

1 Continue immediate care for at least five days and preferably a week even if all seems well.

2 Maintain complete bed rest for at least another week beyond discontinuance of probatory medication even if child is completely asymptomatic.

Continuing Care (Meningeal Phase)

1 If the observed patient progresses to the meningeal phase despite efforts outlined under Immediate Care or the patient is first seen in the meningeal phase continue or initiate broad steps previously outlined.

2 With or without consultants consider or reconsider advisability of serum therapy administration of aureomycin or chloramphenicol prescription of sedatives hypnotics and muscle relaxants and non-technical hydrotherapy.

3 In addition arrange for non-technical physiotherapeutic procedures until more expert advice can be obtained. With child supine raise foot of bed so that oral secretions gravitate out of mouth and do not collect in pharynx larynx or lower respiratory passages if possible obtain an electrically driven suction drainage apparatus for removal of secretions from oropharynx place a board between spring and mattress to support back put another board at the end of the bed to prevent foot drop place sandbags under shoulders and knees so that latter are held at a 15 degree angle provide ankle pad.

4 Try to maintain patient morale by reassurance diversions such as reading and radio listening and by establishment of an air of complete confidence and calm. Stress prognostically favorable statistical features emphasized in the discussion of Principles of Diagnosis and Therapy.

6 Perform diagnostic lumbar test if diagnosis is in doubt. Note clear fluid with cell count ranging between 10 and 500, normal sugar and increased protein (p 3736). If fluid is turbid, make spread and cultures for pathogens if sugar is absent and/or cell count is higher than 500 (Table 194 p 3735). Institute search for tubercle bacilli (p 262). Avoid spinal drainage for therapeutic purpose and veto intrathecal instillations of serum or antibiotics for reasons elsewhere outlined in detail (p 4409).

7 Consider immunotherapy by intramuscular deposit of 10 to 20 cc of convalescent serum (Hyland), gamma globulin or placental extract. Repeat at 8, 12 or 24 hour intervals if necessary.

8 Consider probatory antibiotic therapy with aureomycin or chloramphenicol. Give priming and daily maintenance doses approximating 100 mg per kilogram of body weight (3.5 gm for the child weighing 75 lbs). If possible give 2 products every few moments with fruit juice, ice cream, carbonated beverage, soup, tea or plain water. If stomach is intolerant of either antibiotic substitute the other. If neither can be taken orally make a saline solution or suspension, warm and instill rectally using a male catheter and a funnel. Hold buttocks firmly together to prevent expulsion.

9 If child is intolerant of antibiotic both orally and rectally consider intravenous injection of 100 to 500 mg of aureomycin hydrochloride dissolved in the diluent of 0.75% sodium carbonate as supplied by the manufacturer.

10 Do not permit overdistention of bladder or rectum. Catheterize at 12 to 24 hour intervals if necessary. Give a simple rectal flush daily or every second day.

11 For sedation and hypnosis employ reassurance, reading, phonograph records, radio listening, etc. Try to avoid drugs which tend to depress respiration. If non-pharmacologic efforts fail resort cautiously to small doses of barbiturates for sedation and hypnosis. For the former purpose prescribe 8 to 15 mg ($\frac{1}{8}$ to $\frac{1}{4}$ gr) of phenobarbital at 3 or 4 hour intervals as a sleeping draught. Prescribe 45 to 90 mg ($\frac{3}{4}$ to $1\frac{1}{2}$ gr) of sodium secenal swallowed with warm fluid.

12 For control of muscle spasm and pain first try hydrotherapy. Instruct mother to wring out a blanket in very hot tap water, press with a very hot iron at the bedside and apply to involved portions of the body. Repeat at 15 minute intervals for one hour out of every three or four. Often this improved nontechnical hydrotherapy allays the patient and gives the parent the comfort of making a practical contribution to the recovery of the child.

13 If hydrotherapy is unsuccessful in the control of muscle spasm consider supplementation with relaxant drugs (p 4418). For oral use prescribe artane (2 to 5 mg), oranixon (250 mg), priscol (25 mg) and tolserol (250 mg) in tablet form. Most reported experience has been with priscol which is adrenolytic and sympatholytic. Doses of 25 to 50 mg repeated every four hours are effectual and have negligible toxicity (nausea, vomiting and orthostatic hypotension producing sensations of

6 Place the tracheotomized patient in an oxygen tent. Maintain constant professional nursing care most particularly to maintain patency of tracheotomy tube

7 Continue intravenous drip after tracheotomy and introduction of the patient into the oxygen tent. Use the drip for administration of fluid foods (5 to 10% dextrose protein hydrolysate plasma whole blood) antibiotics (aureomycin hydrochloride) and indicated drugs. For sedation or hypnosis favor 30 to 90 mg ($1\frac{1}{2}$ to $1\frac{1}{2}$ gr) of sodium phenobarbital for muscle relaxation if priscol and neostigmine have proven unsatisfactory slowly introduce 200 to 400 cc of 0.1% procaine prepared by dissolving 1 gm in 1000 cc of physiologic saline

8 In the presence of respiratory difficulty be sure that the airway is clear. If the disturbance is not due to obstruction of the respiratory lumen look for acute dilatation of the stomach due to air swallowing. If present pass a Levine tube through nostril and into stomach aspirate air and fluid content with a glass syringe

9 Have a respirator in readiness long before evidences of severe pulmonary embarrassment are encountered

Convalescence

1 Remember that maximum neurologic damage usually occurs within five days and that spontaneous recovery of nerve cells is terminated after thirty days. As soon as meningeal paralytic and bulbar manifestations no longer are the cause for immediate concern concentrate on restoration and coordination of neuromuscular units left anatomically intact. For nontechnical muscle re-education provide for passive exercise of joints provided that pain is not produced. With subsidence of pain encourage active motion through normal joint range

2 Insist on consultation with physiotherapist and/or orthopedic surgeon for technical assistance in rehabilitation. Do not use splints braces or crutches without approval of specialists

3 Sometime later than one month after onset of paralysis request consultation again with physiotherapist and/or orthopedist. Assess degree of neuromuscular recovery. Discuss indicated surgical procedures to minimize disability and provide for maximum rehabilitation

POLLINOSIS

[Pollen Allergy Hay Fever]

Pollen allergies are frequently encountered in clinical practice. Therapeutic objectives in the management of these allergic hypersensitivities include recognition and elimination of sensitizing bacterial or non bacterial agents (p 4176) desensitization or hyposensitization using pollen extracts (p 4191) psychotherapy (p 1316) and palliation and prophylaxis with antihistamines and adrenergics (p 4212)

5 If paralysis does not occur within five days of onset of meningeal phase consider institution of convalescent therapy later outlined.

Continuing Care (Paralytic Phase without Bulbar Involvement)

1 Continue measures previously advocated if child has been under constant observation Inaugurate previous routine if patient has not been seen earlier in the disease

2 Insist on specialist consultation preferably a round table discussion with physiotherapist orthopedist and internist or pediatricist specially trained in poliomyelitis If necessary apply for aid to National Foundation for Infantile Paralysis

3 Consider or re consider use of antibiotics non technical physiotherapy non technical hydrotherapy sedatives hypnotics and muscle relaxants as previously outlined

4 Until specialists arrive supplement hydro and physiotherapy by use of electric pad or infra red lamp to affected parts in the interval between attacks and by gentle stroking and passive motion through the normal range of motion several times daily Permit the mother to cooperate for reasons previously described

5 Avoid splints braces and other mechanical supports which may tend to promote atrophy and deformity Use bandages and pillows to protect involved parts

6 As unobtrusively as possible seek evidences of bulbar involvement as previously described If detected proceed according to suggestions that follow immediately if absent carry out measures of convalescence after the critical period of five days

Continuing Care (Bulbar Paralysis)

1 In both meningeal and early paralytic phases look for small signs of bulbar involvement (p 4472) If present institute therapy before subjective manifestations become too marked.

2 Discontinue food fluids and medication by mouth to minimize chances for aspiration pneumonitis

3 Set up an intravenous drip introduce 250 to 500 cc of 5% dextrose in saline add 500 mg aureomycin hydrochloride for intravenous use to prevent secondary infection Consider continuance of intravenous infusion with plasma protein hydrolysate or whole blood if there are definite indications

4 With consultants discuss elective tracheotomy (p 3958) Advocates of this measure have established the following indications for the procedure nasal voice evidences of interference with swallowing mucus pooling in throat and posterior pharynx obstruction or obliteration of free airway increasing anoxemia increasing pulse rate increasing headache and restlessness and pulmonary atelectasis and/or paralysis of vocal cords (West and Dower Am J Med Sci 217 252 1949)

5 If elective tracheotomy is decided as a procedure of choice consider anesthesia with pentothal introduced into the established intravenous drip

The injection schedule outlined above is compressed so that daily injections are administered so long as the patient does not exhibit hypersensitivity

When the sixth injection has been given (0.05 cc of 1:500 solution containing 100 pollen units) time intervals may be increased to two or three days provided that symptom relief has been obtained. Then at the twelfth injection when 1:50 dilution has been reached intervals may be increased to five or seven days.

9. Whether patient is first desensitized by coseasonal or preseasonal schedules make arrangements for *perennial desensitization*. Either of the following schedules may be used for this purpose.

SCHEDULE FOR PERENNIAL DESENSITIZATION

| Day | Dilution | Size of Dose in cc | Noon or Pollen Units |
|--|----------|-----------------------|-------------------------|
| Once each fortnight from October 1 to April 15 | 1:50 | 0.2 | 4,000 |
| May 1 | 1:50 | 0.3 | 6,000 |
| May 15 | 1:50 | 0.4 | 8,000 |
| June 1 | 1:50 | 0.5 | 10,000 |
| June 15 | 1:50 | 0.6 | 12,000 |
| July 1 | 1:50 | 0.7 | 14,000 |
| July 15 | 1:50 | 0.8 | 16,000 |
| August 1 | 1:50 | 0.9 | 18,000 |
| August 15 | 1:50 | 1.0 | 20,000 |
| October 1 | 1:50 | 0.2 | 4,000 |
| Continue fortnightly as above | | | |

ALTERNATE SCHEDULE FOR PERENNIAL DESENSITIZATION

| Day | Dilution | Size of Dose in cc | Noon or Pollen Units |
|---|----------|-----------------------|-------------------------|
| Once each fortnight from October 1 to July 15 | 1:50 | 0.2 | 4,000 |
| July 19 | 1:50 | 0.3 | 6,000 |
| July 23 | 1:50 | 0.4 | 8,000 |
| July 27 | 1:50 | 0.5 | 10,000 |
| July 31 | 1:50 | 0.6 | 12,000 |
| August 4 | 1:50 | 0.7 | 14,000 |
| August 8 | 1:50 | 0.8 | 16,000 |
| August 12 | 1:50 | 0.9 | 18,000 |
| August 15 | 1:50 | 1.0 | 20,000 |
| October 1 | 1:50 | 0.2 | 4,000 |

POLYCYTHEMIA

[See Blood and Blood-forming Organs Neoplasms of]

Principles of Diagnosis and Treatment

1 Determine in general date of onset of symptoms (tree pollen from March 15 to May 15 grass pollen from May 1 to July 1 weed pollen from August 1 to October 1)

2 From geographical distribution of grasses and weeds productive of hay fever (Fig 96 p 560) narrow the likely offending pollens so that a minimum number of tests are required

3 Perform scratch tests (p 557 and Fig 94 p 555) using only common pollen antigens under suspicion

4 After termination of tests immediately prescribe antihistamine using any oral product (p 4212) Continue during desensitization and throughout period of pollination

5 From any reliable manufacturer whose product has been approved by the Council on Pharmacy and Chemistry of the American Medical Association obtain treatment set for desensitization against pollens to which patient reacts

6 Start pre seasonal treatment if time permits according to following schedule

SCHEDULE OF PRESEASONAL TREATMENT

| Dose | Dilution | Size of Dose in cc | Noon or Pollen Units |
|------|----------|-----------------------|-------------------------|
| 1 | 1 5000 | 0.1 | 20 |
| 2 | | 0.2 | 40 |
| 3 | | 0.3 | 60 |
| 4 | | 0.4 | 80 |
| 5 | | 0.5 | 100 |
| 6 | 1 500 | 0.05 | 100 |
| 7 | | 0.1 | 200 |
| 8 | | 0.2 | 400 |
| 9 | | 0.3 | 600 |
| 10 | | 0.4 | 800 |
| 11 | 1 50 | 0.5 | 1000 |
| 12 | | 0.05 | 1000 |
| 13 | | 0.1 | 2000 |
| 14 | | 0.2 | 4000 |
| 15 | | 0.3 | 6000 |
| 16 | | 0.4 | 8000 |
| 17 | | 0.5 | 10 000 |
| 18 | | 0.6 | 12 000 |
| 19 | | 0.8 | 16 000 |
| 20 | | 1.0 | 20 000 |

Injectations given twice weekly

7 If time does not permit completion of schedule for preseasonal treatment as outlined above using two injections a week patient may be given three injections weekly provided there are no serious local or constitutional reactions suggestive of histamine type hypersensitivity

8 If patient arrives during period of pollination *coseasonal therapy* may be attempted cautiously Antihistamine is given in double dosage

disease does streptomycin retain significant current indication. Since polymyxin cannot compete with streptomycin in the therapy of tuberculosis it is unlikely that it will find an important niche in the practitioner's armamentarium.

Toxicity

On injection polymyxin produces local irritation and immediate histamine type hypersensitivity reactions (p. 4167) undoubtedly due to impurities in the mixture. More significant are evidences of renal tubular irritation as manifested by albuminuria, the presence of leukocytes and casts in the urinary sediment, oliguria, elevation of blood non-protein nitrogen, and depression of renal functional tests.

Were polymyxin of equal potency against gram-negative organisms sensitive alike to it and to aureomycin-chloramphenicol, the nephrotoxic potential alone would be sufficient to make the latter preparations of election.

PROMIN

Promin possesses the formula sodium p,p'-diamino-diphenyl sulfone N,N-di(dextrose sulfonate). The dry powder of promin is off-white to light yellow in color. It is slightly hygroscopic. The 40% aqueous solution used intravenously is a clear light yellow adjusted to pH 5.6 to 6.0. In this concentration promin solution is stable indefinitely.

Available Products

Promin (Parke Davis) ampuls of 5 cc containing 2 gm (40%)
For intravenous use

Promin Jelly (Parke Davis) for topical use (5%)

Administration

Oral administration is too toxic for clinical use and intramuscular injections are painful. In consequence promin can only be given intravenously in an initial dose of 1 gm (2.5 cc of 40% solution), increased gradually to 5 gm (12.5 cc of 40% solution) provided that toxic manifestations do not occur earlier (p. 4552).

Toxicity

Promin has considerable toxicity, principally a destructive action on erythrocytes producing secondary and progressive anemia. Less often it causes leukopenia, so that the blood count must be made at frequent intervals to avoid serious difficulties.

In addition to major toxic manifestations promin may also cause nausea, vomiting, headache, sneezing, and toxicoderms. In consequence of the frequency of untoward reactions it is recommended that treatment be discontinued for one day each week and for one or two weeks every four months.

POLYMYXIN

Polymyxin an antibiotic that is chemically a polypeptide or mixture of polypeptides is derived from *B. polymyxa*. It is very similar to it but not identical with aerosporn obtained from *B. aerosporus* (p 4162).

Available Product

Because of its toxicity polymyxin is not commercially available. Small supplies are being used for laboratory and clinical investigation.

Pharmacology

Polymyxin is obtainable as the water soluble crystalline hydrochloride. Its activity is not affected by reactions between pH 2 and 7. It is only slightly affected by blood serum and other mediums at physiologic ranges.

Given orally polymyxin is not absorbed and eliminates sensitive fecal organisms. Injected intramuscularly in daily doses of 3 to 5 mg per kilogram per day it produces blood levels approximating 0.6 to 1.3 micrograms per 100 cc at the end of twenty four hours. Some polymyxin is excreted in urine but none is demonstrable in cerebrospinal fluid.

Bacterial Spectrum

Polymyxin was originally introduced to compete with streptomycin. It was hoped that the new antibiotic would prove less toxic and less prone to produce resistant bacterial strains (p 4133).

Polymyxin has the advantage over streptomycin in that it is bactericidal whereas the older preparation is bacteriostatic. It is equally effective against streptomycin sensitive and streptomycin resistant strains of gram negative bacilli. In therapeutic doses it is from 2 to 80 times more potent than streptomycin.

Unfortunately present preparations of polymyxin are nephrotoxic as discussed later. Furthermore resistant strains to the new antibiotic develop as in the case of streptomycin.

The roster of polymyxin sensitive organisms includes *E. typhosa*, *Salmonellae*, *Shigellae*, *E. coli*, *V. comma* (cholera), *H. pertussis*, *H. influenzae*, *Br. melitensis* (brucellosis), *P. plague*, *P. tularensis* (tularemia), *Ps. aerogenes* (pyocyaneus) and *Kl. pneumoniae* (Friedlander bacillus).

Even granting superiority of polymyxin over streptomycin in the treatment of gram negative bacterial invasions, comparison of the bacterial spectrum with that of aureomycin and chloramphenicol (p 4243) reveals the clear superiority of the two latter as compared with more toxic injectable polymyxin.

A roster of demonstrably polymyxin resistant organisms includes gram positive cocci, gram positive bacilli, mycobacteria including tuberculosis and leprosy, and fungi.

Particularly significant in the list of polymyxin resistant organisms is the presence of *M. tuberculosis*. Only in antibiotic treatment of this

2 The diagnosis is established by identification of micro-organism in urine cultures since there are no characteristic clinical features

3 Urinary sepsis due to *Pseudomonas aeruginosa* is treated in the manner of the one produced by *A. aerogenes* (p 4161)

4 The most significant difference in the management of *Pseudomonas aeruginosa* infections is that chloramphenicol is distinctly the antibiotic of choice

5 Streptomycin and sulfadiazine are second choices to chloramphenicol. They may be used as substitutes or supplements

6 For reactions that are not clear at present *Pseudomonas aeruginosa* is relatively insensitive to aureomycin

7 As in the instance of urinary infections with *A. aerogenes* antibiotic therapy must be fortified with indicated surgical measures necessary for relief of urinary tract obstruction (p 2264)

PSORIASIS

Principles of Diagnosis and Therapy

1 Psoriasis, one of the frequently encountered dermatoses of general practice, is easily recognized through its unique appearance (Fig 1001 p 3417)

2 Local measures elsewhere outlined in detail are merely palliative (p 3418)

3 Systemic therapy using undecylenic acid, cortisone and ACTH gives considerable promise for more satisfactory control of the affliction. The former product, commercially available as sevinon (Schering), is marketed in soft gelatin capsules containing 0.44 gm. of undecylenic acid. Prescribe 4 capsules 3 times daily for the first week, 6 capsules 3 times daily for the second week, 8 to 10 capsules 3 times daily after the second week and continue until there is complete disappearance of lesions. Side effects of oral undecylenic acid therapy include bitter taste, mild nausea, dyspepsia and frequent bowel movements.

4 Perlman (JAMA 139:444, 1949), the original proponent of undecylenic acid therapy for psoriasis, reports relief of itching and disappearance of lesions in each of seventeen cases under observation. Unfortunately, other observers have not encountered such uniformly successful findings.

5 Although material has been available only for treatment of a very few patients, injections of cortisone and ACTH appear to have complete specificity in psoriasis. Should these preliminary results be substantiated, psoriasis will be added to the growing list of allergic hypersensitivities (p 4167).

PROMIZOLE

Promizole (4,2-diaminophenyl-5-thiazolyl sulfone) is an isostere of 4,4-diaminodiphenyl sulfone having a 2-aminothiazolyl radical replacing one amino phenyl group of the parent sulfone. The dry powder is off white color and stable. It is soluble in water to the extent of 30 to 40 mg per 100 cc at 30° C.

Available Products

Promizole Tablets 0.5 gm (Parke Davis)

Administration

Promizole is administered orally in tablet form. The initial dose is 0.5 gm given three times daily at meal time, gradually increased to an optimal dose of 6 to 8 gm daily. Rest periods are given as in chasone therapy (p. 4552).

Toxicology

Toxic manifestations are rare and usually mild. When they occur they are similar to those of other sulfones.

PROTEUS VULGARIS INFECTIONS**Principles of Diagnosis and Therapy**

1. *Proteus vulgaris* is capable of producing both urinary and meningeal infections.
2. Invasions are managed in the manner of those caused by *A. aerogenes* (p. 4161).
3. Chloramphenicol is the antibiotic of choice with streptomycin and sulfonamide held in reserve for substitution or supplementation if necessary.
4. For reasons that are presently unknown, aureomycin is relatively ineffectual.
5. As in the case of *A. aerogenes* urinary infections, antibiotic therapy must be accompanied by indicated surgical procedures to eliminate urinary tract obstruction (p. 2264).
6. In *Proteus vulgaris* meningitis, combined antibiotic therapy (chloramphenicol, streptomycin, sulfadiazine) must be supplemented with necessary surgical procedures such as ligation of internal jugular vein.

PSEUDOMONAS AERUGINOSA [*P. PYOCYANEUS*] INFECTIONS**Principles of Diagnosis and Therapy**

1. *Pseudomonas aeruginosa* most frequently causes urinary tract infections (p. 2334).

Practical Management

- 1 Institute non specific treatment of the infected patient (p 67-73)
- 2 Inaugurate specific anti infective therapy with aureomycin or chloramphenicol Give a priming dose of 50 mg per kilogram of body weight (35 gm for the average adult weighing 150 lbs) Accomplish this by requesting the patient to swallow 2 products every few minutes until the entire loading dose has been administered.
- 3 Beginning four hours after completion of the priming dose start maintenance doses of 2 products (500 mg) every four or six hours depending on patient response and intensity of infection
- 4 If stomach is intolerant to either antibiotic substitute the other Should gastric irritation be produced by ingestion of both products pass a duodenal tube and give the contents of either or both in solution or suspension transduodenally

QUINACRINE U.S.P

Quinacrine is chemically 3-chloro-7-methoxy-9(1-methyl-4-diethylamino-lentylamino) acridine hydrochloride It is a potent but toxic antimalarial made virtually obsolete by newer and less toxic preparations especially chloroquine (p 4283) and chlorguanide (p 4281) It is the anthelmintic of choice in teniasis

Available Products

Atabrine Dihydrochloride (Winthrop) Tablets of 50 and 100 mg Ampuls containing 200 mg with 10 cc ampuls of sterile distilled water for use as diluent

Pharmacology Therapeutics and Toxicity

See p 519

The status of quinacrine has been altered remarkably by introduction of newer antimalarials Where the efficacy of quinacrine approached that of chloroquine and chlorguanide as in the suppression of malaria the negligible toxicity and non-pigmentary properties of the newer products throws the balance clearly in their favor

In severe infections quinacrine may be injected intramuscularly in the dose of 0.4 gm in 20 cc of sterile distilled water using both buttocks As soon as the patient is able to swallow one of the newer products is substituted

QUININE ETHYL CARBONATE N.F

Quinine ethyl carbonate is a white odorless tasteless powder containing approximately 82% of Quinine (p 4486) Its chemical formula is $C_2H_5O \cdot CO \cdot OC_{20}H_{25}N_3O$

PSYCHOGENIC ALLERGY

Psychogenic allergies occur very frequently (p 552) Usually they are in the nature of attacks of urticaria angioneurotic edema broncho spasm and neurodermatitis Therapeutic objectives include psychotherapy (p 1316) and palliation and prophylaxis using adrenergics and antihistamines (p 4212)

Initial efforts at psychotherapy are limited to non technical methods (p 1316) particularly striving to establish, for the patient the relation ship between eruption and emotional affect With persistence of symptoms of sufficient severity consider reference for formal psychotherapy particularly by analytic technics (p 1328)

Q FEVER

[Nine Mile Fever]

Principles of Diagnosis and Therapy

1 Q fever is a specific rickettsemia caused by *Rickettsia burnetii* Q fever is undoubtedly more common in the United States than is generally believed Many individuals particularly in the Southwest have had the disease without being aware of its presence as attested by antibodies found in analyses of five thousand serum specimens

2 Cattle undoubtedly account for the transmission of Q fever although the manner in which human beings become infected is unknown There is grave suspicion of an intermediary insect vector

3 Clinical manifestations include elevation of temperature head ache muscle aches chilliness and respiratory symptoms These last may be in the upper passages causing sneezing nasal obstruction and sore throat but more often they are in the nature of a pneumonitis resembling the lesion of a virus pneumonitis (p 4636) Cough is generally dry and non productive Later in the disease dulness and rales appear but there are rarely signs of frank consolidation Neither spleen nor lymph nodes enlarge The temperature generally persists untreated for five to fourteen days and usually exceeds 102 F (p 382)

4 Radiographs usually show a pulmonary lesion with an infiltration of uniform ground glass density The shadows are usually circumscribed in peripheral portions of the lung This appearance is in contrast with that of virus pneumonitis where the lesion is usually feathery and spreads fanwise from hilus to periphery

5 The diagnosis of Q fever is made definitively by isolation of rickettsia from blood during acute stages of the disease and by increase in titer of specific antibodies during convalescence Q fever is differentiated from virus pneumonitis in that cold hemagglutinins are not demonstrable and from other rickettsemias in that there is no change in the Weil Felix reaction

RABIES

[Hydrophobia Lyssa Derriengue]

Principles of Diagnosis and Therapy

1 Rabies is one of many neurotropic virus diseases producing non suppurative encephalomyelomeningitis (p 442)

2 For the most part rabies is transmitted to humans through the bite of the dog but other animals also are reservoirs of infection (p 439)

3 Large scale prophylaxis of rabies could be accomplished if all licensed animals were subjected to compulsory immunization and muzzling and if all non licensed ownerless unmuzzled animals were destroyed Accomplishment of this goal is obstructed by a large and highly vocal group of dog fanciers who tend to resist any effort to interfere with the dog population While such people may reject a program based on protection of human beings they can scarcely fail to accept one designed for the protection of the dog

4 For active immunization against rabies several officially acceptable vaccines are commercially available for use in human beings as well as dogs

5 Rabies vaccines are uncontaminated suspensions of attenuated diluted dried or dead fixed virus of rabies Virus is obtained from central nervous tissues of animals suffering from fixed virus rabies infection

The National Institute of Health of the United States Public Health Service exercises rigid controls over rabies vaccines The Council on Pharmacy and Chemistry of the American Medical Association recognizes vaccines prepared by the following methods

RABIES VACCINES

| Method | Preparation | Administration | Manufacturer |
|---------|--|--|--|
| Pasteur | One fifth inch of dried cord, emulsified in 0.6 cc of 60% glycerine containing 0.3% tincture of iodine | Get three sets each of seven doses Dilute dried cord with 2.5 cc of sterile saline at time of injection Inject subcutaneously once daily for twenty one days | United States Public Health Service |
| Harris | Brains and cords ground to paste frozen with CO ₂ snow and rapidly dried and stored in vacuum in cold | Give contents of one vial in increasing unitage daily for ten to fourteen days | Dr D. I. Harris Laboratory or Eli Lilly |
| Seiple | Brains or cords triturated with isotonic saline containing 1% phenol strained incubated diluted with saline to strength and put up in vials containing single daily dose | Give contents of vial subcutaneously daily for seven to twenty eight days | Cutter Lederle Medical Arts Laboratory National Drug Co Sharp & Dohme Squibb United States Standard Products Co or Wyeth |

Available Products

Euquinine (Mallinckrodt Merck) Powder

Therapeutics

For use as antipyretic and antimalarial in capsule doses of 0.3 gm (5 gr) three times daily. *Euquinine* has the advantage over crude quinine in that it is tasteless. Toxic symptoms are reputedly less common and less severe.

Toxicology

See Cinchonism (p 518)

QUININE NF

Quinine formerly the antipyretic and analgesic of choice has yielded to less toxic and equally efficacious preparations such as acetyl salicylic acid (p 3832) formerly the sole antimalarial of proven efficacy it has been superseded for the most part first by quinacrine (atabrine) and pamaquine (plasmochin) and more recently by chloroquine (aralen) and chlorguanide (paludrine).

Whereas quinine toxicity has resulted in a virtual total eclipse in the symptomatic management of pains and fever quinine salt still have a place in the treatment of malaria. The residual indications appear to be

- 1 rapid defervescence of acute attack
- 2 intravenous injection in the comatose patient
- 3 combined with pentaquine or isopentaquine for treatment of relapsing vivax infections (p 4398)

Available Products

Quinine Bisulfate U S P

Quinine Dihydrochloride U S P

Quinine Ethylcarbonate (*Euquinine*) U S P

Quinine Hydrochloride U S P

Quinine Sulfate U S P

Of these quinine sulfate is most commonly used in capsules of 60, 120, 200, 250 and 300 mg. For injectable use the soluble dihydrochloride is prepared by dissolving 0.6 gm in 300 cc of sterile physiologic saline.

Pharmacology

See p 516

Toxicity

See Cinchonism p 518

By comparison vaccine gave no protection whatsoever and combined antiserum and vaccine treatment did not enhance the beneficial effect of antiserum given alone. In a small group of human cases antiserum concentrate was administered intramuscularly in doses of 1 to 1.5 cc per kilogram of body weight. The clinicians involved did not wish to hazard human lives by omitting vaccine treatment entirely so that each of these patients was given additionally a 7 to 21 day course of vaccine. To date none of the twenty patients has shown any signs of rabies. Until there is further information physicians who see rabies may communicate with the Lederle laboratories to obtain serum. Koprowski advises that antiserum be employed in conjunction with vaccine in all exposures at least for the present. However a course of seven injections may be considered as sufficient in conjunction with antiserum in place of the 14 or 21 day course.

10 Finally there are evidences that aureomycin and chloramphenicol may prove virucidal for the rabies organism. If preliminary observations are substantiated it may be that both rabies vaccine and hyperimmune serum will be rendered obsolete.

Practical Management

1 The animal that inflicted the wound should not be destroyed. Notify local health or police authorities to apprehend the dog for observation. It is unnecessary to induce active immunization in the human unless the dog shows prior clinical evidences of hydrophobia.

2 Though all authorities agree that every effort should be made to remove virus from the portal of entry there is conflicting opinion concerning the actual technic of wound treatment. Thus Johnson recommends that the wound be thoroughly washed under local anesthesia with 20% soap solution. In his opinion this is undoubtedly the best method of removing or inactivating virus.

3 In contrast to Johnson's opinion the time honored technic for treatment of dog bite requires cauterization with concentrated nitric acid (p. 3969).

4 The physician who treats an occasional wound inflicted by a potentially rabid animal cannot omit cauterization with nitric acid despite the consequences of greater scar formation particularly in more serious bites of the face. Wounds about the head are 16 times as lethal as those of the hands and arms and 80 times as dangerous as those of legs. It is all very well for the experienced expert with institutional backing to rely wholly on a washing with concentrated soap solution but the isolated practitioner cannot assume this responsibility.

5 If the dog cannot be apprehended or if he gives evidences of clinical hydrophobia antirabies therapy must be inaugurated. For this purpose obtain any commercially available Council approved rabies vaccine. Carry out injections according to instructions provided by the manufacturer. Reassure patient and family that only one human of each 1000 to 2000 persons suffering dog bite develops rabies. Sedate with 15 to 30 mg phenobarbital every three to four hours and prescribe hypnotic at bedtime.

RABIES VACCINES (Continued)

| Method | Preparation | Administration | Manufacturer |
|--------------------------------|---|--|--------------|
| Chloroform Killed | Vaccine prepared as by Semple technic but with substitution of chloroform for phenol | Inject 0.5 cc daily for seven to twenty-eight days | Wyeth |
| Ultraviolet Irradiation Killed | Tissue suspension in a continuously flowing thin stream exposed to germicidal rays of an ultraviolet lamp and preserved with 1:10,000 sodium ethylmercurithiosalicylate | Inject 1 cc subcutaneously daily for fourteen to twenty-one days | Pitman Moore |

6 Immunization with rabies vaccine may produce a postvaccinal encephalopathy (p 4307). Some claim that postvaccinal encephalopathy has caused more deaths than rabies itself. This hazard has been attributed to introduction of a rabies like virus in the vaccine such as occurred when the virus of homologous serum jaundice contaminated yellow fever vaccine (p 4358). To obviate this complication ultraviolet irradiated vaccine is available.

A second and more likely explanation of postvaccinal encephalopathy is production of allergic hypersensitivity (p 4169). Supporting the latter view is a recent experience in which postvaccinal encephalopathy yielded to treatment with antihistamine. In addition there has been produced a rabies vaccine freed by methods of extraction from those factors productive of allergic hypersensitivity.

7 The relationship of rabies to postvaccinal encephalopathy has been the subject of study by Pait and Pearson in Los Angeles County (Am J of Pub Health 39:875, 1949). In the experiences of these writers the chances of acquiring rabies from a known dog bite approximate 1 in 1400 to 1 in 2100. In Los Angeles County a single human case of rabies is annually encountered. Nevertheless eight hundred persons are given rabies vaccine each year. Of over five thousand individuals subjected to rabies vaccination nine developed postvaccinal encephalopathy with one death (approximately 1 in 600). These figures confirm the opinion of Sellers that postvaccinal encephalopathy has caused more death than rabies itself.

While the hazards of postvaccinal encephalopathy are thus stressed antivivisectionists and others who agitate to prevent medical progress must not take these figures out of text. Without available vaccine both animal and human populations might well suffer serious ravages of the disease.

9 In addition to rabies vaccine there have been made available hyperimmune rabbit and sheep serums (Koprowski). Concentrates of these products retaining only gamma globulin fractions are currently under investigation for passive immunization of animals and humans.

In experiments with hamsters a single injection of antiserum given twenty-four hours after exposure proved protective as against 100 per cent mortality among the untreated.

By comparison vaccine gave no protection whatsoever and combined antiserum and vaccine treatment did not enhance the beneficial effect of antiserum given alone. In a small group of human cases antiserum concentrate was administered intramuscularly in doses of 1 to 1.5 cc per kilogram of body weight. The clinicians involved did not wish to hazard human lives by omitting vaccine treatment entirely so that each of these patients was given additionally a 7 to 21 day course of vaccine. To date none of the twenty patients has shown any signs of rabies. Until there is further information physicians who see rabies may communicate with the Lederle laboratories to obtain serum. Koprowski advises that antiserum be employed in conjunction with vaccine in all exposures at least for the present. However a course of seven injections may be considered as sufficient in conjunction with antiserum in place of the 14 or 21 day course.

10 Finally there are evidences that aureomycin and chloramphenicol may prove virucidal for the rabies organism. If preliminary observations are substantiated it may be that both rabies vaccine and hyperimmune serum will be rendered obsolete.

Practical Management

1 The animal that inflicted the wound should not be destroyed. Notify local health or police authorities to apprehend the dog for observation. It is unnecessary to induce active immunization in the human unless the dog shows prior clinical evidences of hydrophobia.

2 Though all authorities agree that every effort should be made to remove virus from the portal of entry there is conflicting opinion concerning the actual technic of wound treatment. Thus Johnson recommends that the wound be thoroughly washed under local anesthesia with 20% soap solution. In his opinion this is undoubtedly the best method of removing or inactivating virus.

3 In contrast to Johnson's opinion the time honored technic for treatment of dog bite requires cauterization with concentrated nitric acid (p. 3969).

4 The physician who treats an occasional wound inflicted by a potentially rabid animal cannot omit cauterization with nitric acid despite the consequences of greater scar formation particularly in more serious bites of the face. Wounds about the head are 16 times as lethal as those of the hands and arms and 80 times as dangerous as those of legs. It is all very well for the experienced expert with institutional backing to rely wholly on a washing with concentrated soap solution but the isolated practitioner cannot assume this responsibility.

5 If the dog cannot be apprehended or if he gives evidences of clinical hydrophobia antirabies therapy must be inaugurated. For this purpose obtain any commercially available Council approved rabies vaccine. Carry out injections according to instructions provided by the manufacturer. Reassure patient and family that only one human of each 1000 to 2000 persons suffering dog bite develops rabies. Sedate with 15 to 30 mg phenobarbital every three to four hours and prescribe hypnotic at bedtime.

6 Since it is generally conceded that Pasteur treatment is futile for individuals so severely bitten by rabid animals that the incubation period is shorter than thirty days administer hyperimmune serum to those patients who exhibit clinical symptoms less than a month after the bite. Since hyperimmune serum concentrate is not yet commercially available contact Koprowski at the Lederle Laboratories in Pearl River New York for material and instructions.

7 Pending more complete reports administer probatory anti-infective therapy with aureomycin or chloramphenicol. Give a priming dose approximating 100 mg per kilogram of body weight (7 gm for the average adult weighing 150 pounds). Suggest that 2 products be swallowed every few minutes with an abundant amount of water, milk, fruit juice, ice cream, tea or bouillon to avoid gastric irritation. Four hours after the loading dose has been ingested start daily maintenance doses using a quantity equal to the priming dose divided into 4 equal portions given at 6 hour intervals.

8 Whether the patient is given vaccine, serum, antibiotic alone or in combination institute prophylactic antihistaminic therapy using daily doses of 200 mg of pyribenzamine or benadryl concurrently with specific therapy and for at least two weeks following last exposure to therapeutic antigen.

9 For control of neuromuscular symptoms adopt measures employed in tetanus (p. 4566).

RAT BITE FEVER

[Sodoku Haverhill Fever]

General Principles of Diagnosis and Therapy

1 Rats may infect man with *Spirillum minus* or *Streptobacillus moniliformis* (p. 363).

2 Disease may be transmitted by rat bite (Fig. 55, p. 362) or by contamination of food supplies, particularly milk.

3 *Spirillum minus* is sensitive both to aureomycin and penicillin; *streptobacillus* is penicillin resistant but streptomycin sensitive.

4 Because of the severity of the disease and its untreated fatality rate approximating 10 per cent, combined antibiotic therapy is warranted.

Practical Management

1 Deposit intramuscularly 600,000 units of procaine penicillin G in aqueous suspension and 2 gm of streptomycin.

2 Begin prophylactic antihistamine therapy using daily oral doses of 200 mg of pyribenzamine or benadryl.

3 Continue with daily maintenance doses of 600,000 units of procaine penicillin G in aqueous suspension and 1 to 1.5 gm streptomycin. Give latter in 2 or 3 divided doses.

4 If a favorable response has not been obtained within forty-eight

hours give additionally an oral priming dose of aureomycin approximating 50 mg per kilogram of body weight (3.5 gm for the average adult weighing 150 pounds). To prevent gastric irritation give 2 products every few moments with large quantities of water, milk, tea, ice cream or cream cheese.

5 If oral aureomycin is not tolerated, inject 100 mg intravenously in diluent supplied by manufacturer.

6 If response is unsatisfactory, set up intravenous drip. Deliver alternately 250 000 units of crystalline potassium penicillin G, 100 mg of aureomycin hydrochloride and 0.5 gm streptomycin every 6, 8 or 12 hours. During intervals maintain drip with physiologic saline, 5% dextrose or plasma as indicated.

RELAPSING FEVER

[Famine Fever, Garapata Disease, Kimputu, Mianeh Fever,
Ruckfall Typhus, Spirillum Fever]

Principles of Diagnosis and Therapy

1 Relapsing fevers (p. 357) are treponematoses produced by a variety of *Borrelia* (Fig. 53, p. 358) and transmitted to man by lice or ticks.

2 Characteristic of the infection is the temperature chart which reveals initial febrile periods of four to ten days, free intervals of seven to fourteen days, and a series of recurrences each of which is shorter than the previous episode. Eventually the patient develops a permanent immunity and is cured.

3 The diagnosis is established by demonstrating *Borrelia* in blood by Wright's stain, darkfield examination or intraperitoneal animal injection.

4 Louse-borne relapsing fever may be prevented by use of insecticides and insect repellents, notably DDT (p. 4373). Tick-borne epidemics are less easily controlled since the vector is susceptible to most insecticides, including DDT. Tick-borne attacks are prevented by avoiding tick bites and by removing ticks as soon as they have attacked but before they have fed.

5 The various *Borrelia* provocative of relapsing fever are penicillin sensitive.

6 Relapsing fever responds to penicillin. Of fifty-two patients with the louse-borne variety treated by Ingraham and Lapenta, all responded to 25 000 units given intramuscularly every three hours to total 1 million units. There were no relapses, whereas the relapse rate in untreated controls was 87 per cent. Improvements in penicillin therapy should afford equally specific results from single deposits of 300 000 to 600 000 units of procaine penicillin G in aqueous suspension or sesame oil with or without 2% aluminum monostearate given intramuscularly daily for perhaps a week.

7 The use of arsenicals has become obsolete due to the high efficacy of penicillin and its low toxicity

RESPIRATORY SYSTEM NEOPLASMS OF

Neoplasms of the respiratory passage are being encountered much more often than previously. Whether this is due to more accurate diagnostic acumen or an actual increase in the incidence of bronchopulmonary growth is of academic importance. Far from academic however is the fact that thoracic surgery has been so perfected that the expertly trained surgeon enters the pleural cavity with slightly less risk than is associated with laparotomy.

These considerations spur the practitioner to make the early diagnosis of asymptomatic malignancy for purposes of rapid reference to consulting thoracic surgeon.

NEOPLASMS OF UPPER RESPIRATORY PASSAGES

Practical Management

- 1 During routine examination observe nose and nasopharynx for evidences of ulceration or neoplasm (Fig 473 p 2069)
- 2 If there is a positive finding refer patient to specialist for biopsy
- 3 Obtain blood for serologic tests for malignancy (p 4431)
- 4 With a malignancy or precancerosis discuss with the consultant possible excision or roentgen therapy

NEOPLASMS OF LARYNX

Practical Management

- 1 Entertain a high index of suspicion with the complaint of continued hoarseness (p 2160) or sore throat (p 2071) especially if there is no antecedent history or evidence of infection and the patient is beyond the age of 35
- 2 By mirror laryngoscopy look for evidence of neoplasm or ulceration (Figs 474 and 475 p 2073)
- 3 Obtain blood for serologic tests of malignancy (p 4431) and syphilis
- 4 Unless mirror laryngoscopy is completely satisfactory refer patient to consulting laryngologist
- 5 Obtain x ray of chest in usual postero anterior position. Also make right and left lateral obliques focused over larynx for observation of airway
- 6 Request consulting laryngologist to obtain specimen for surface biopsy or section
- 7 If there is suspicion of malignancy or actual proof of cancer discuss therapy by laryngectomy and/or irradiation

NEOPLASMS OF BRONCHI LUNGS PLEURA AND MEDIASTINUM

Practical Management

1 Routine fluoroscopy of the chest makes it possible to recognize asymptomatic neoplasms of bronchi pleurae and lungs. The competent practitioner overlooks no opportunity to place his patient behind the screen and investigate localized areas of radio-opacity.

2 Fluoroscopic and radiographic examinations of the chest are mandatory in the presence of cough (p 2050) continued expectoration pain in the chest (p 2080) mediastinal displacement (p 2084) and hemoptysis (p 2058).

3 With any broncho-pulmonary involvement obtain sputum for routine bacterial examination guinea pig injection and cytodiagnosis by Papanicolaou method.

4 Get chest x rays in various positions and compare findings with radiographs of proven neoplasms (Figs 478 and 479 p 2079 Fig 480 p 2082 Figs 482 and 483 p 2083).

5 Get blood for serodiagnosis of malignancy (p 4431).

6 If pleural fluid is obtainable perform thoracentesis and send material to clinical pathologist for cytodiagnosis by Papanicolaou method.

7 In the presence of any suspicious circumstance order bronchoscopy (Fig 476 p 2074 and Fig 477 p 2076).

8 Request bronchoscopist to obtain surface spreads or a tissue specimen for cytodiagnosis.

■ If an intrathoracic tumor is inaccessible to usual examination consider exploratory thoracotomy.

10 In the presence of positive findings refer patient to thoracic surgeon for radical removal of neoplasm.

RHEUMATIC FEVER

Principles of Diagnosis and Therapy

1 In the light of current knowledge rheumatic fever requires redefinition. It may be classified as a complex in which manifestations of bacterial allergy are superimposed on those due to bacterial infection. The pathogen in most if not all instances is the hemolytic streptococcus (Lancefield Group A); presenting symptoms and signs are due to microbic invasion and to hypersensitivity manifestations resulting from perverse responses of host tissues to alien bacterial protein (p 4171).

2 For guidance in the management of the patient with rheumatic fever four phases of the complex require identification despite the fact that they often overlap particularly when recurrences are provoked by fresh hemolytic streptococcal invasions or by non specific excitants such as fatigue strain cold or trauma (Waksman).

3 In Phase I of rheumatic fever the tissues of a constitutionally

predisposed host are invaded by hemolytic streptococci (p 187) The clinical manifestations of this infection may be so mild as to pass unnoticed they may be vague giving no hint of their potentially dire consequences they may simulate ordinary upper respiratory infections and masquerade as the common cold or an influenza they may be more precise and localize as attacks of nasopharyngitis tonsillitis or pneumonia they may be more generalized accompanied by systemic symptoms and a generalized eruption such as the scarlatiniform rash of scarlet fever (p 171)

4 Therapeutic objectives in the management of Phase I are elimination of offending bacteria prevention of allergic hypersensitivity manifestations and avoidance of further exposure of the hypersensitive patient to therapeutic allergens The latter category unfortunately includes salicylates iodides gold sulfonamides normal and convalescent serum plasma and human blood

5 Whatever the symptoms and signs of the initial phase of rheumatic fever and irrespective of the degree of their severity potentially allergenic bacterial protein enters the tissues of the hypersensitive host inaugurating the second phase of the complex Phase II continuously silent so far as clinical manifestations are concerned corresponds to the incubation period of other tuberculin type hypersensitivities (p 4169) Objective evidence of immunologic changes that occur during Phase II first noted by Coburn is the phase reaction consisting of the formation of a heavy flocculent precipitate when serum of a patient in Phase II is mixed with serum of a patient in Phase III While no claim for specificity or universality is made for the phase reaction its present importance is that of an indication of the profound immunologic alterations that characterize rheumatic fever In addition to the phase reaction serum of infected patients possess high titers of antistreptolysin O and antihyaluronidase Presumably the immune bodies develop in response to exotoxins secreted by hemolytic streptococci streptolysin lyses erythrocytes while hyaluronidase liquefies connective tissue

6 Therapeutic goals in Phase II of the rheumatic fever complex are entirely prophylactic The practitioner attempts to eliminate hemolytic streptococci through use of hypoallergenic antibiotics to prevent hypersensitivity reactions with antihistamines currently available and with hormones possessing adrenocorticotrophic or adrenocortical activity when the more potent agencies are in greater supply and to extirpate or drain foci harboring hemolytic streptococci particularly in upper respiratory passages and most especially in accessory nasal sinuses and tonsils

7 Phase III is characterized by proliferative and exudative abacterial lesions involving the entire mesenchymal apparatus (Collagen Diseases p 4290) They may be observed in endocardium (Fig 21 B p 188) myocardium (Fig 21 A p 188) pericardium pleura lungs subcutaneous tissues joints periarticular structures brain and skin (p 190) During Phase III hemolytic streptococci may or may not be demonstrable in upper respiratory areas but blood cultures are always

sterile leukocytes are increased erythrocytes decreased and erythrocyte sedimentation rate accelerated There is usually an aseptic pyrexia (p 23) which may be relative or absolute (p 3485)

8 Phase III of the rheumatic fever complex is uninfluenced by treatment with antistreptococcal drugs but its manifestations are miraculously dissipated by cortisone or ACTH and perhaps by other products possessing adrenocorticotrophic or adrenocortical activity (Hench et al Proc of the Staff Meet of the Mayo Clin 24 277 1949)

9 Phase IV of the rheumatic fever complex is characterized pathologically by scarring usually noted most consistently in myocardium and endocardium These cicatricial lesions are uninfluenced by antistreptococcal preparations by antihistamines or by the potent newer products They provide sites of diminished resistance for later invasion by less virulent streptococci usually of the viridans variety resulting in subacute bacterial endocarditis (p 1021) These scarrings also produce mechanical circulatory difficulties with diminution in cardiac reserve and eventual production of backward failure (p 941)

10 Therapeutic goals in the management of Phase IV of the rheumatic fever complex are identical with those of Phase II Additionally efforts are directed at prevention and relief of the consequences of congestive failure

11 For active therapy of various phases of the rheumatic fever complex the practitioner has at his disposal antirheumatics (salicylates iodides and gold) sulfonamides antibiotics particularly penicillin aureomycin and chloramphenicol antihistamines and products capable of stimulating or simulating adrenal cortical activity

12 Although salicylates are still regarded by some authorities as possessing specificity in the treatment of rheumatic fever actually they appear to have only symptomatic value in Phase III where they are demonstrably antipyretic and analgesic and where they visibly reduce swelling and redness of inflamed joints They do not prevent development of vascular and myocardial lesions of the anaphylactic hypersensitive type though they may lessen pericardial endocardial and valvular manifestations Those who remain impressed with the virtues of salicylates explain their alleged antirheumatic propensities on possible interference with the metabolism of connective tissue through conjugation with glucuronic acid and or glycine and through interference with the water binding properties of mucopolysaccharides (Reagan and Myers)

13 Against the use of salicylates is the demonstration that the drug is capable of being a hyperallergen both experimentally and clinically (p 4178) Stated otherwise the therapeutic agent of itself actually may cause a syndrome identical with that which it is supposed to cure On the basis of these observations we are included among those who currently withhold salicylates in rheumatic fever Even in Phase III we favor control of fever by hydrotherapy of pain by new morphine substitutes devoid of significant side reactions (adonan demerol dolophine isonipecaine meperidine and methadone) and we prescribe antihistamines which simulate salicylates in their pre

vention of pericardial endocardial and valvular lesions at least in the experimental animal

14 The case for the antirheumatic specificity of iodide and gold is much weaker than that for salicylate. In point of fact few clinicians today prescribe either of these remedies in rheumatic fever although chrysotherapy still has its advocates in the management of rheumatoid arthritis (p 4502). Neither iodide nor gold provides demonstrable symptomatic relief even in Phase III each is capable of producing tuberculin type hypersensitivity manifestations and additionally gold has intrinsic toxicity particularly objectionable in the management of afflicted youngsters (p 4346).

15 Sulfonamides are definitely streptococcicidal. As such they have therapeutic value in the management of Phases I and II. However they do not prevent hypersensitivity manifestations and indeed appear to influence unfavorably the third phase of the rheumatic syndrome. They possess inherent toxicity and additionally have proven their hazardous potential in the production of tuberculin type hypersensitivity reactions closely simulating those that follow introduction of hemolytic streptococci in patients predisposed to rheumatic fever (p 4173).

16 We are among those who oppose the use of sulfonamide in the prevention or treatment of rheumatic fever. At least equally effective streptococcicidal effects are obtained from penicillin aureomycin and chloramphenicol each of which is relatively non toxic and hypo allergenic.

17 We favor the use of penicillin as the antibiotic of choice in the treatment of the rheumatic fever complex. Penicillin is powerfully streptococcicidal whether given orally or parenterally it may produce an occasional histamine type hypersensitivity reaction but the more dangerous tuberculin type phenomena have not yet been reported in striking contrast to observations made on salicylates sulfonamide iodide and gold.

18 Penicillin for all of its streptococcicidal potential does not prevent exudative and proliferative hypersensitivity manifestations. Hence it is of limited value in Phase III and IV other than for suppression of recurrent invasion by offending microbes.

19 The unusual patient who cannot be given penicillin due to hypersensitivity manifestations may be treated by substitution of aureomycin or chloramphenicol. Unlike sulfonamide these newer antibiotics are not hyperallergenic. They have accounted for an occasional histamine type hypersensitivity reaction but like penicillin no tuberculin type lesions have been observed following their experimental or clinical use.

20 We favor prescription of antihistamines in all phases of the rheumatic fever complex. They prevent hypersensitivity manifestations due to invading microbe or therapeutically introduced antibiotic. Experimentally at least one of the group (benadryl) apparently lessens the development of pericardial endocardial and valvular lesions in the manner of sodium salicylate. Benadryl does not prevent vascular

and myocardial lesions of the anaphylactic hypersensitive type nor has it any effect on exudative or proliferative lesions observed in the third phase of the rheumatic fever complex

21 Cortisone and ACTH in Phase III of the rheumatic fever complex cause rapid disappearance of fever tachycardia polyarthritides and abnormalities in the electrocardiogram (Hench et al loc cit) However the newly developed products are not streptococcicidal and hence cannot be used as substitutes for antibiotics Discontinuance of hormonal therapy is followed by exacerbation of previously ameliorated manifestations suggesting that the response is purely symptomatic

22 Justifiable enthusiasm for newly developed antibiotics and hormones must not overshadow the importance of inaugurating or continuing established measures of non specific therapy in the care of the patient with rheumatic fever (pp 194-199) It is still necessary to insist on prolonged bed rest an adequate diet psychotherapy removal or drainage of infected foci and judicial consideration of decisions that concern interval surgery marriage and pregnancy (p 198-199)

Practical Management

Prophylaxis

1 Regard as potential sufferers from rheumatic fever all children with family or personal histories of overt attacks those with objective manifestations of a previous attack (valvular defect) and those with otherwise inexplicable subjective or objective evidences of ill health (failure to gain weight fevers of unknown origin recurrent respiratory infections anemia tachycardia etc)

2 Regard as possible Phase I of rheumatic fever all respiratory infections and definitively established hemolytic streptococcal invasions such as septic sore throat scarlet fever and erysipelas (pp 167-186) Be especially wary when faced with the combination of potential Phase I invasion occurring in the potentially rheumatic youngster

3 Protect the potentially rheumatic child by insistence on general measures of hygiene including a full diet adequate housing facilities provision for central heating and sufficient rest throughout the school year

4 Correct anemia by diet and/or by prescription of hematinics if necessary (p 3897)

5 Insist on triple immunization against diphtheria tetanus and pertussis (p 4365) Episodes of rheumatic fever may be precipitated by other intercurrent infections

6 Recommend summer vacations in the country for the city child Especially support summer camps for underprivileged who suffer from rheumatic fever

7 Favor outdoor exercise but restrict competitive sport if the latter is productive of excessive strain or fatigue

8 Search for foci harboring hemolytic streptococci Favor intra nasal surgery for drainage of blocked accessory nasal sinuses and adenoidectomy with or without tonsillectomy if indicated

9 Despite these precautions try to avoid seeding an anxiety neurosis

10 Provide for desensitization if the youngster exhibits allergic manifestations to allergens other than hemolytic streptococcus. Particularly protect against drug food and pollen syndromes (p 4477)

11 Throughout the school year rid the upper respiratory passages of hemolytic streptococci by prescription of 250 000 units of crystalline potassium penicillin G in tablet form after each meal and at bed time for the first seven days of each month. Repeat during the month if there is exposure to respiratory infection. By this step alone recurrences of rheumatic fever were completely eliminated in susceptible children as against an attack rate of 11 to 19 per cent in control groups.

12 For penicillin sensitive children substitute aureomycin or chloramphenicol as streptococcicides giving daily doses of 25 mg per kilogram of body weight (1 capsule of 250 mg after each meal and at bed time for the child weighing 75 lbs) for the first seven days of each month.

13 Concurrently with antibiotic and for an additional week prescribe antihistamine. Depending on the age size and tolerance of the youngster suggest doses of 100 to 200 mg daily of pyribenzamine or benadryl. If drowsiness is encountered use the combination of antihistamine and adrenergic (pyribenzamine or benadryl with ephedrine p 4212).

14 Useless and obsolete as prophylactic agents are rheumatic fever vaccines and serums, arthritis vaccine, streptococcal vaccine and streptococcus bacteriophages.

Immediate Care (Phase I)

1 Even on slightest suspicion of a Phase I attack advocate complete bed rest and institute general measures used for care of infected patient (p 67).

2 While rheumatic fever is not a reportable disease isolate the patient particularly from other children in a susceptible family. Remember that the hemolytic streptococcus provocative of rheumatic fever is as infectious as that which produces scarlet fever.

3 For antistreptococcal effect prescribe penicillin. Give a priming oral dose of 500 000 units of crystalline potassium penicillin G in milk ice cream soup fruit juice tea or broth. If expense is not a factor use candy medication such as spersoids (Lilly) of which one rounded teaspoonful is the equivalent of 50 000 units.

4 Four hours after the priming dose start daily maintenance doses of 250 000 units every three hours.

5 In the penicillin sensitive substitute aureomycin or chloramphenicol. Give a loading dose of 50 mg per kilogram of body weight (1.75 gm for the child weighing approximately 75 lbs). If antibiotic is rejected orally try a rectal dose using double quantities dissolved in saline warmed and instilled with a male catheter and funnel.

6 If aureomycin is not tolerated substitute chloramphenicol or terramycin.

7 Four to eight hours after the loading dose of aureomycin or chloramphenicol start daily maintenance doses Use an amount equal to the priming quantity divided into 4 equal portions given at 6 hour intervals

8 Concurrently with antibiotic and for a period of at least two weeks after the last dose prescribe prophylactic antihistamine Give 4 daily doses each of 25 to 50 mg of pyribenzamine benadryl or one of their substitutes (p 4212)

9 Avoid salicylates iodides gold and sulfonamides Of the only sulfonamides are demonstrably streptococcicidal and this antibacterial effect is better and more safely produced by administration of penicillin aureomycin or chloramphenicol Each of the proscribed drugs has inherent toxicity is hyperallergenic has little potential for antirheumatic efficacy and is capable of producing tuberculin type hypersensitivity manifestations simulating lesions of acute rheumatic fever (p 4169)

10 The advisability of climatotherapy in convalescence from rheumatic fever remains debatable The facts assembled during World War II and later by the Metropolitan Life Insurance Company throw some doubt on the relationship between the disease and climatic conditions The collected data suggest that rheumatic fever may occur in any part of the United States there is more rheumatic fever and rheumatic heart disease in the allegedly low incident areas than was previously supposed claims of observers in specific areas offering particular advantages over other locations have not yet been substantiated by satisfactory scientific data once rheumatic fever is active there exists no proof that any climate alters the severity or duration of the disease or the outcome in any given instance (JAMA 137 420 1948) Against climatotherapy are psychologic and economic factors elsewhere detailed (p 3761)

11 Despite wide publicity the efficacy of large doses of vitamin C (200 to 300 mg daily) in rheumatic fever appears questionable In a series of twenty even patients treated with large doses of ascorbic acid no influence of therapy on the course of the disease was observed

12 In convalescence institute or repeat suggestions as to prophylaxis

Continuing Care (Phase II)

1 Following an initial Phase I of the rheumatic fever complex and particularly a recurrent Phase I do not be misled by the seemingly favorable response to therapy

2 Continue maintenance doses of antibiotic for a period of at least one month following cessation of all clinical manifestations Thereafter resume prophylactic antibiotic therapy the first week of each month as outlined previously

3 Concurrently with each course of antibiotic order antihistamines as previously outlined Continue for at least one week after cessation of antibiotic therapy

4 Search for foci of infection after each individual Phase I episode Consult otolaryngologist Favor surgical intervention where indicated

9 Despite these precautions try to avoid seeding an anxiety neurosis

10 Provide for desensitization if the youngster exhibits allergic manifestations to allergens other than hemolytic streptococcus. Particularly protect against drug food and pollen syndromes (p 4477)

11 Throughout the school year rid the upper respiratory passages of hemolytic streptococci by prescription of 250 000 units of crystalline potassium penicillin G in tablet form after each meal and at bed time for the first seven days of each month. Repeat during the month if there is exposure to respiratory infection. By this step alone recurrences of rheumatic fever were completely eliminated in susceptible children as against an attack rate of 11 to 19 per cent in control groups

12 For penicillin sensitive children substitute aureomycin or chloramphenicol as streptococcicides giving daily doses of 25 mg per kilogram of body weight (1 capsule of 250 mg after each meal and at bed time for the child weighing 75 lbs) for the first seven days of each month

13 Concurrently with antibiotic and for an additional week prescribe antihistamine. Depending on the age size and tolerance of the youngster suggest doses of 100 to 200 mg daily of pyribenzamine or benadryl. If drowsiness is encountered use the combination of antihistamine and adrenergic (pyribenzamine or benadryl with ephedrine p 4212)

14 Useless and obsolete as prophylactic agents are rheumatic fever vaccines and serums arthritis vaccine streptococcal vaccine and streptococcus bacteriophages

Immediate Care (Phase I)

1 Even on slightest suspicion of a Phase I attack advocate complete bed rest and institute general measures used for care of infected patient (p 67)

2 While rheumatic fever is not a reportable disease isolate the patient particularly from other children in a susceptible family. Remember that the hemolytic streptococcus provocative of rheumatic fever is as infectious as that which produces scarlet fever

3 For antistreptococcal effect prescribe penicillin. Give a priming oral dose of 500 000 units of crystalline potassium penicillin G in milk ice cream soup fruit juice tea or broth. If expense is not a factor use candy medication such as spersoid (Lilly) of which one rounded teaspoonful is the equivalent of 50 000 units

4 Four hours after the priming dose start daily maintenance doses of 250 000 units every three hours

5 In the penicillin sensitive substitute aureomycin or chloramphenicol. Give a loading dose of 50 mg per kilogram of body weight (1.75 gm for the child weighing approximately 75 lbs). If antibiotic is rejected orally try a rectal dose using double quantities dissolved in saline warmed and instilled with a male catheter and funnel

6 If aureomycin is not tolerated substitute chloramphenicol or terramycin

7 Four to eight hours after the loading dose of aureomycin or chloramphenicol start daily maintenance doses. Use an amount equal to the priming quantity divided into 4 equal portions given at 6 hour intervals.

8 Concurrently with antibiotic and for a period of at least two weeks after the last dose prescribe prophylactic antihistamine. Give 4 daily doses each of 25 to 50 mg of pyribenzamine, benadryl or one of their substitutes (p 4212).

9 Avoid salicylates, iodides, gold and sulfonamides. Of these only sulfonamides are demonstrably streptococcicidal and this antibacterial effect is better and more safely produced by administration of penicillin, aureomycin or chloramphenicol. Each of the proscribed drugs has inherent toxicity, is hyperallergenic, has little potential for antirheumatic efficacy and is capable of producing tuberculin type hypersensitivity manifestations simulating lesions of acute rheumatic fever (p 4169).

10 The advisability of climatotherapy in convalescence from rheumatic fever remains debatable. The facts assembled during World War II and later by the Metropolitan Life Insurance Company throw some doubt on the relationship between the disease and climatic conditions. The collected data suggest that rheumatic fever may occur in any part of the United States; there is more rheumatic fever and rheumatic heart disease in the allegedly low incident areas than was previously supposed. Claims of observers in specific areas offering particular advantages over other locations have not yet been substantiated by satisfactory scientific data. Once rheumatic fever is active, there exists no proof that any climate alters the severity or duration of the disease or the outcome in any given instance. (JAMA 137:420, 1948). Against climatotherapy are psychologic and economic factors elsewhere detailed (p 3761).

11 Despite wide publicity the efficacy of large (200 to 300 mg daily) in rheumatic fever and in a series of twenty even patients treated with salicylic acid, no influence of therapy on the course was observed.

12 In convalescence institute or repeat therapy.

Continuing Care (Phase II)

1 Following an initial Phase I particularly a recurrent Phase I favorable response to therapy.

2 Continue maintenance for one month following cessation; then alter, resume prophylactic month as outlined previously.

3 Concurrently with as previously outlined of antibiotic therapy.

4 Search for foci. Consult otolaryngologist.

Unless prompt and dramatic improvement is noted with arthsonc and perccorten—ascorbic acid abandon therapy after three or four consecutive daily injections

11 Undesirable side effects of hormones may be encountered in children with previously damaged hearts and manifestations of actual or threatened backward failure Retention of water and salt may cause urgent distress requiring discontinuance of hormone and use of mercurial diuretics (p 4305) excessive potassium loss may require introduction of potassium chloride For oral use prescribe 0.6 gm every four hours if renal function is normal In an emergency inject subcutaneously or by slow intravenous infusion 2 gm dissolved in 100 cc of 5 per cent dextrose in distilled water

12 If symptoms persist and cortisone and ACTH cannot be obtained consider use of para aminobenzoic acid PABA is without significant toxicity and it does not produce allergic hypersensitivity reactions so far as is presently known Given orally in enteric coated tablets of 0.5 gm up to a daily total of 24 gm for the adult and proportionately less for younger children PABA possesses anti rheumatic properties somewhat analogous to salicylates

13 Treat cardiac complications as they develop (p 196) but remember that digitalis has no prophylactic value and may prove embarrassing to the normal or compensated circulation (p 854)

14 Consider carefully all aspects of the infection before terminating bed rest (p 196) Continue immobilization longer than in the management of other infectious diseases unless the child is excessively restless and unmanageable If possible maintain bed rest for at least ten afebrile days and until blood count is normal and erythrocyte sedimentation rate approaches normality

15 In convalescence immediately prepare to complete the cycle by carrying out measures indicated under the heading of Prophylaxis

Continuing Care (Progressively Unfavorable Course)

1 With a continued unfavorable course despite therapy previously outlined suspect mechanical disturbances such as increasing backward failure (p 941) and/or superimposition of subacute bacterial endocarditis with an antibiotic insensitive organism

2 Look for evidences of backward failure (hydrothorax peripheral edema engorgement of liver cardiac irregularity progressive myocardial changes best demonstrated electrocardiographically) Consider therapy aimed at improvement of circulatory efficiency (p 945)

3 Obtain repeated blood cultures If a bacteremia is demonstrable test organism against available antibiotics Institute therapy as outlined under subacute bacterial endocarditis (p 1021)

4 In convalescence revert to Prophylactic Treatment

RHEUMATOID ARTHRITIS

[Atrophic, Proliferative or Infectious Arthritis]

Principles of Diagnosis and Therapy

1 Two observations one by a pathologist and the other by a therapist place rheumatoid arthritis in the definite category of tuberculin type allergic hypersensitivities (p 4169) Rich basing his conclusions on human autopsy material and on experimentally produced hypersensitivities revealed the similarity between rheumatoid arthritis and other syndromes of like pathogenesis particularly rheumatic fever and Hench by his demonstration that exudative and proliferative features of rheumatoid arthritis are reversible regularly produced remissions with injections of cortisone and ACTH

2 Although clinical manifestations of rheumatoid arthritis have been regarded as predominantly articular (Fig 753 p 2912 Fig 754 p 2914 and Fig 755 p 2915) most patients reveal widespread lesions common to other recognized hypersensitivity syndromes These include valvular defects myocardial changes secondary anemia pleural and pericardial effusions scleroderma and lymphadenopathy with hepatosplenomegaly (Still's Disease Felty's syndrome)

3 Whereas emphasis previously was focussed on differences between rheumatic fever and rheumatoid arthritis current interest is directed to their similarities In each syndrome the patient presents aseptic pyrexia abacterial arthropathy endocardial myocardial pericardial and peripheral vascular disturbances anemia leukocytosis increased erythrocyte sedimentation rate and periods of remission punctuated by episode of exacerbation

4 Differences between rheumatic fever and rheumatoid arthritis viewed in the above light appear more apparent than real more quantitative than qualitative Rheumatoid arthritis occurs more often in young adults rather than children Phase I is less clearly defined Phase II is less clearly apparent and is of longer duration in Phase III the joint involvement of rheumatoid arthritis is more likely to be polyarticular and more apt to involve smaller joints exudative phenomena are less likely to resolve and more apt to progress to cicatrization with joint deformity limitation of motion and eventual ankylosis periarthritic changes are more advanced with greater muscle atrophy endocarditis and myocarditis are less prominent but peripheral vascular disturbances dominate the circulatory aspect of the disease systemic manifestations particularly fever are apt to be of a lower order of magnitude but of longer duration and the anemia is more marked and more persistent In the Phase IV in contradistinction to the complete resolution of the process in rheumatic fever the joint of the patient with rheumatic arthritis shows persistent chronic inflammatory disturbances eventually terminating in deformity and limited if not lost motion

5 All that has been said of the therapy of rheumatic fever applies equally to the management of the patient with rheumatoid arthritis.

6 Pending availability of newer preparations possessing the potential of cortisone and ACTH main reliance still must be placed on non specific measures including psychotherapy rest home physiotherapy dietotherapy occupational therapy breathing exercises extirpation of foci of infection and corrective orthopedic surgery (pp 2918-2924) Particularly should efforts be directed at correction or prevention of deformity by scrupulous attention to posture in standing sitting and reclining (p 3492) corrective exercises (p 3757) proper shoeing (p 3081) and provisions for rest in extension by use of removable splints bandages and casts

7 To the previous list of useless measures now may be added massive doses of vitamin D (ertron) and the Russian anti reticulocytotoxic serum (ACS)

8 As in rheumatic fever antibiotics (penicillin aureomycin and chloramphenicol) serve merely to eliminate sensitive bacteria particularly hemolytic streptococci when these behave as sensitizing allergens Antihistamines merit use for prevention of acute histamine type hypersensitivity manifestations especially from prescribed antibiotic There is general agreement that salicylate has only palliative value and iodide therapy has more or less become obsolescent (p 4177)

9 We have found no reason to alter our previous opinion concerning gold therapy which we approach with little enthusiasm and great fear (p 2922) This pessimistic viewpoint is sustained by two small but carefully studied series reported by Friedman and Steinbrocker and by Browning and his colleagues (New Eng J M 240 362 1949 and 237 428 1947) The former studied eighteen patients of whom one had a complete remission later followed by relapse two were slightly improved and fifteen showed no change though later two entered into inactive phases of the disease In the Browning experience with forty seven patients 25 per cent were improved 60 per cent showed no change and 15 per cent appeared to be worse Of his forty seven patients almost two thirds developed toxic manifestations Of these there were two instances of exfoliative dermatitis with one death (approximately 2% treatment mortality)

10 The results claimed by advocates of chrysotherapy are not sufficiently impressive to offset the findings of the less enthusiastic Thus Cecil who advocates several series or courses with intervals of four to eight weeks claims remissions in only 31 per cent great improvement in 35 per cent moderate improvement in 20 per cent and no improvement in 14 per cent However the favorable results are somewhat less impressive when the investigator admits to a 40 per cent relapse rate in those who did well and an over all toxicity of 25 per cent

11 The weaknesses of gold therapy are the more apparent when results are compared with those of cortisone and ACTH Whereas the latter produce improvement in a time as brief as a few hours gold courses must be given over a span of no less than three months and more often up to one to two years

12 We still maintain that chrysotherapy is best reserved for the patient who is progressing unfavorably and who is willing to take the

risk of drug toxicity. Many individuals would rather be dead than incapacitated and they choose heroic forms of therapy. Others more timid in their reactions prefer safety to risk particularly in view of the 75 per cent favorable course in the natural evolution of the disease (p 4346)

13 The details of chrysotherapy are elsewhere discussed (p 4346). We continue to be impressed by the toxicity of gold despite the fact that BAL provides effective antidotal therapy (p 4251). We believe with Archer that beneficial results of gold therapy are dependent on liver damage that patients improve in proportion to the degree to which hepatic function suffers as in remissions produced during the course of virus hepatitis and pregnancy.

14 For those who feel that chrysotherapy is justifiable current preparations of choice include

Gold and Sodium Thiosulfate (Sanocrysin Abbott Merck Searle) marketed in ampuls containing 10 25 50 75 and 100 mg of 37.4% solution for intravenous injection.

Gold Sodium Thiomolate (Myochrysine Merck) marketed in 1 cc ampuls containing 10 25 50 and 100 mg of the salt or approximately half as much gold for intramuscular injection.

Aurothioglucose (Solganol E Schering) marketed in ampuls of 1.5 cc containing 10 25 and 50 mg of a 50% oily suspension for intramuscular injection.

15 Of available products smaller doses are recommended than were previously given. For example Cecil advocates a first intramuscular injection of 10 mg a second of 25 mg a third of 50 mg and a maximum of 100 mg given once a week until a total of 750 to 1000 mg has been introduced in a single course. To prevent immediate reactions most advocates of chrysotherapy favor intramuscular rather than intravenous introduction. All warn of the necessity for following physical signs and laboratory examinations of urine and blood for early detection of toxicity. There is general agreement that therapy should be interrupted at the first sign of toxicity and that BAL should be administered immediately that serious or progressive manifestations of poisoning become apparent (p 4251). There is also general agreement that weekly injections suffice and that there should be intervals of four to eight weeks between courses of which there apparently should be no fewer than two.

Practical Management

1 Those who find themselves in agreement with stated viewpoints concerning the etiology and mechanisms productive of rheumatoid arthritis will institute therapy according to details laid down for management of Phase III of rheumatic fever (p 4500).

2 Until cortisone and ACTH are more widely distributed steroid therapy may be attempted with the commercially available compound arlisone (Wyeth). This substance known to chemists for twelve years is chemically 21-acetoxypregnenolone or delta 5-pregnene 3,21-diol 20,1,21-acetate. Tested on a preliminary group of fifteen patients 80 per

cent responded favorably. Advanced long standing rheumatoid arthritis appeared not to react well at all. In the patients tested none of the objectionable side effects of cortisone and ACTH were observed (Seifter).

3 For those patients who are not progressing favorably despite the routine suggested gold therapy merits consideration according to principles previously discussed (p 4346).

4 In convalescence as in rheumatic fever institute or reinstitute suggestions detailed for prophylaxis.

RHINOSCLEROMA

Principles of Diagnosis and Therapy

1 Whether or not rhinoscleroma is a specific infectious disease remains presently unknown (p 2109).

2 Certainly the condition is unsightly and a source of embarrassment to the patient (Fig 986B p 3359).

3 On the basis of a single case report from the Mayo Clinic treatment may be undertaken with streptomycin.

RHINOSPORIDIOSIS

Principles of Diagnosis and Therapy

1 Rhinosporidiosis is one of the infrequently observed systemic mycoses (p 489). The characteristic visible lesion is a friable polyp resembling a cockle comb which may appear on the skin or a mucous surface such as nose ears eyes larynx vagina or penis.

2 Rhinosporidiosis occurs particularly in those who work brings them in contact with stagnant water. The diagnosis is established by finding spore filled sacs in infected tissues.

3 Direct initial efforts at excision or cauterization of individual lesions.

4 If unsuccessful in eradication of polyps resort to systemic therapy with pentavalent antimonials (p 4224). Greatest experience has been with neostibosan (Winthrop) injected intravenously in 5% solution or intramuscularly in 25% solution. As an initial dose the adult is given 0.2 gm. If there is no untoward reaction the dose is increased to 0.3 gm. and a course of eight to ten injections is completed by daily injections or every second day until a total of 2 to 4 gm. has been administered.

RICKETTSIALPOX

[Kew Gardens Spotted Fever]

Principles of Diagnosis and Therapy

1 Rickettsialpox is a newly described disease due to *Rickettsia akari*. It is transmitted to man by the bite of a rodent mite *Allodermanyssus sanguinis*. The common house mouse is the reservoir of infection.

2 The disease is heralded by a primary lesion which usually is found on covered parts of the body though it may occur on neck, face, arms or dorsum of hands. It first appears as a firm red papule at the site of the mite's bite. Later the primary lesion develops into a deep seated vesicle which ultimately shrinks and dries to form a black eschar much like that seen in tsutsugamushi fever.

3 About a week after appearance of the primary lesion the systemic phase of the disease is inaugurated by an abrupt onset of fever, chills, sweats and backache. At this time examination reveals enlargement of regional lymph nodes and remnants of primary inoculum.

4 The course of the disease is characterized by fever with morning remissions and afternoon rises to 103 or 104° F. Febrile manifestations persist for about a week.

5 Just after onset of fever or several days later a generalized maculopapular eruption is observed. At first lesions are discrete and erythematous. Later vesicles develop in summits of papules. Eventually these dry to form black crusts which ultimately fall off without scarring. The rash may be scanty, moderate or abundant. It has no distinct pattern of distribution and may appear first on arms, legs, abdomen, back, face or chest. It has not been observed on palms or soles.

6 The duration of the rash varies from two to ten days. At its height there is usually some enlargement of the spleen.

7 There are no unusual laboratory findings in rickettsialpox. At most there is a moderate leukopenia which disappears two weeks after the patient has been afebrile.

8 So far rickettsialpox has not been followed by complications or sequels. The diagnosis is established in specially equipped laboratories by complement fixation tests.

9 Despite its benign character rickettsialpox merits treatment with aureomycin and chloramphenicol. Either of these preparations produces rapid defervescence and cure although the eruption may pursue the identical course observed in the untreated patient. For the initial priming dose prescribe 25 to 50 mg per kg of body weight (1.75 to 3.5 gm for the average adult weighing 150 lbs). For maintenance daily doses an identical amount is suggested. Patients who fail to defervesce in twenty-four or thirty-six hours may be given larger quantities.

ROCKY MOUNTAIN SPOTTED FEVER

[Spotted Fever Mountain Fever Bull Fever Black Fever Blue Fever
Tobia Fever of Colombia Choix or Pinta Fever of Mexico]

Principles of Diagnosis and Therapy

1 Rocky Mountain spotted fever is a tick borne rickettsemia characterized by a generalized eruption (Fig 58 p 378)

2 The laboratory diagnosis is established by the Weil Felix reaction and by virus neutralization and complement fixation tests (p 372 and 379)

3 Artificial active immunity is accomplished by injection of vaccine Specific antibiotic therapy is accomplished with chloramphenicol aureomycin and para aminobenzoic acid

Practical Management

Prophylaxis

1 Avoid tick bites by wearing tight fitted clothing Insect repellents and insecticides are of little value against ticks

2 As soon as discovered remove adherent ticks which usually do not begin to feed for several hours Avoid contamination of hands by using forceps or preferably a cigarette or a lighted match applied to the tick body After removal of tick cauterize area of bite with phenol or silver nitrate If neither is available scrub vigorously with soap and water

3 Rocky Mountain spotted fever vaccine prepared from membranes of embryonated chick eggs infected with *Rickettsia rickettsii* is now commercially available (Lederle Squibb) The suspension is formalin inactivated after which it is extracted with ether to remove yolk lipids and tissue debris The result is a solution that is almost water clear However despite precautions taken in preparation of vaccine a certain amount of egg protein remains Therefore question patient before injection concerning sensitivity to eggs

For active immunity of hypoallergic patients inject 1 cc subcutaneously or intramuscularly at weekly intervals for 3 doses Give a booster dose each spring and early summer at times when ticks are most active If more rapid immunity is required inject two doses each of 2 cc at an interval of five days

For patients who require active immunization and who are hyperallergic particularly to egg protein obtain vaccine made from tissues of infected ticks by applying to United States Public Health Service Hamilton Montana

Immediate Care

1 Institute non specific measures for treatment of infected patients (p 68-73)

2 Order an initial priming dose of 50 mg of chloramphenicol or

aureomycin per kilogram of body weight (35 gm for average adult weighing 150 lbs) Administer 2 products every few minutes with milk soup or cream cheese until full amount has been ingested

Continuing Care (Favorable Course)

1 Maintain antibiotic level by giving 50 mg of chloramphenicol or aureomycin per kilogram of body weight per day in four or six equally divided doses. Thus for the average adult weighing 150 lbs, effective maintenance is accomplished by oral administration of two products every three hours omitting 3 A M dose

2 Continue maintenance doses until patient has been afebrile for at least forty eight and preferably seventy two hours

Continuing Care (Unfavorable Course)

1 If course of disease is unaffected by the chosen antibiotic order double doses or add an equal amount of the one not chosen

2 If the chosen antibiotic produced gastric irritation, substitute the opposite number

3 In the rare instance of patient intolerance or organism resistance to both chloramphenicol and aureomycin resort to para aminobenzoic acid Administer the antibiotic orally in a priming dose of 100 mg per kilogram of body weight (7 gm or 14 tablets of 0.5 gm each for average adult weighing 150 lbs) Simultaneously suggest alkaline drinks to prevent excessive acidification of urine

4 If the priming dose of PABA is tolerated orally maintain levels with doses of 2 gm every two hours day and night Examine urine and blood carefully during PABA administration Should total white count fall below 3000 discontinue PABA and deposit penicillin to prevent complications due to agranulocytosis (p 1096) Should urine contain heavy precipitation of PABA crystals order increasing amounts of fluid and bicarbonate

5 If PABA is rejected orally pass a duodenal tube and try trans duodenal introduction of antibiotic dissolved in bicarbonate of soda

6 If enteral administration fails set up an intravenous drip and introduce the priming dose of 7 gm by infusing 350 cc of 2% solution in physiologic saline

Continuing Care (Progressively Unfavorable Course)

1 In rare instances combined antibiotic therapy may be required Give equal parts of chloramphenicol and aureomycin as mentioned above or either or both supplemented by PABA

2 In desperation consider use of hyperimmune Anti Rocky Mountain spotted fever rabbit serum (Lederle) This heterologous product is supplied in ampul vials which yield 20 cc of serum when restored to original volume with contents of another ampul containing 20 cc of pyrogen free sterile distilled water Prior to injection test patient with 1:10 dilution of rabbit serum introduced intracutaneously and by ophthalmic instillation If non sensitive inject lyovac hyperimmune

heterologous rabbit serum intramuscularly in a dose of 20 cc. Sensitive patients are best not treated with serum since potential benefits are feeble compared to risks.

3. Obsolete remedies include Rocky Mountain spotted fever human convalescent serum, penicillin, metaphen and particularly sulfonamides which may accentuate manifestations presumably as the result of superimposed hypersensitivity.

RUBELLA

[German Measles Epidemic Poseola]

Principles of Diagnosis and Therapy

1. German measles is a dermatropic viral infection that has neither complications nor mortality for the patient. It is characterized by the combination of eruption (Fig. 66 p. 317), enlargement of postauricular, occipital and cervical lymph nodes and mild systemic manifestations followed by complete recovery.

2. Unfortunately rubella is a genetic carrier. It may produce congenital deformities in the offspring particularly when the mother suffers the attack during the first trimester of pregnancy (Gregg).

3. Among complications seen in infants born of mothers who had the disease during pregnancy are congenital cataract, partial or complete deafness, abnormalities of the brain, cardiac abnormalities, congenital glaucoma, abnormally small eyes, severe squint, inflammations of the deeper membranes of the eyes, nystagmus, cleft palate, harelip, cretinism, mongolian idiocy, enlargement of the ears, enlargement of the breasts and defects of ribs, teeth, hands or feet.

4. Babies born of mothers having rubella in the first trimester of pregnancy reveal congenital defects in 87 per cent of all instances. There are 42 per cent of abnormalities if the disease occurred in the second trimester of pregnancy and probably none during the third trimester.

RELATION OF CONGENITAL DEFECTS TO TRIMESTER OF PREGNANCY

| Infantile Congenital Defect | First Trimester | Second Trimester | Third Trimester |
|--|-----------------|------------------|-----------------|
| Cataract | 17 | 0 | 0 |
| Congenital heart disease | 17 | 1 | 0 |
| Deafness | 12 | 1 | 0 |
| Malformed teeth | 3 | 0 | 0 |
| Mental defect | 7 | 0 | 0 |
| Spina bifida and hydrocephalus | 3 | 0 | 0 |
| Congenital defects of the gastrointestinal tract | 2 | 1 | 0 |
| Blindness | 1 | 2 | 0 |
| Miscellaneous | 11 | 0 | 0 |

5 Because of the grave consequences to the fetus of maternal rubella the following prophylactic recommendations merit consideration

- (a) Expose female children deliberately to German measles during their pre childbearing ages
- (b) Recommend therapeutic abortion unless there are religious scruples to the contrary for all mothers who acquire German measles during the first or second trimesters of pregnancy
- (c) If interruption of pregnancy cannot be accomplished for one reason or another attempt protection of the fetus by injecting the mother with human convalescent serum preferably obtained from one who has recently recovered from the disease employing intramuscular injections of 50 to 100 cc as often as material can be obtained
- (d) If human convalescent serum is not obtainable substitute gamma globulin for at least three intramuscular injections in 10 cc dosage or placental globulin in double this quantity

6 Mothers who have had the tragic experience of bearing children with congenital defects as a result of rubella may be assured that subsequent offspring are in no danger of similar occurrence (Bass Bull N Y Academy of Medicine Dec 1948 798)

RUSSIAN FOREST SPRING DISEASE

[Russian Spring Summer Encephalitis Russian
Tick Borne Encephalitis Russian Endemic
Encephalitis Russian Far East
Encephalitis]

General Principles of Diagnosis and Therapy

1 Russian forest spring disease is one of many non suppurative encephalomyelomeningitides (p 442) of specific viral origin

2 The clinical manifestations are not characteristic hence the diagnosis is established epidemiologically and serologically (p 445)

3 The virus is probably insect borne The most likely vector is a wood tick

4 Prophylaxis is best accomplished during an outbreak by avoidance of tick bites and their removal before they have fed (p 4507)

5 Activated virus vaccine has been prepared and is said to be effective

6 Successful specific therapy has been claimed for hyperimmune goat serum

7 Should the disease be seen in America it is suggested that it be treated as St Louis or American encephalitis (p 4310)

SALICYLATE

Whereas there is little to be added to what already is known of the pharmacology and therapeutics of the salicylates (pp 194-3833) the production of chronic tuberculin-like allergic hyper-sensitivities by salicylate is a cause for considerable apprehension on the part of many practitioners (p 4169)

Despite enthusiasts who favor massive dose salicylate therapy by oral or intravenous routes in rheumatic fever (p 4498) we are among those who believe that the drug must be withheld pending further investigation (p 4178) The reasons leading to these conclusions are fully detailed in the paragraphs devoted to Anti-therapeutic Devices earnestly recommended for careful study (p 4133)

SALMONELLOSIS

[Paratyphoid Fever]

Principles of Diagnosis and Therapy

1 The group of salmonellos include various gram negative bacillary infections caused by *S. paratyphi* (paratyphoid A) *S. schottmuelleri* (paratyphoid B) *S. enteridis* *S. cholerae suis* and *S. supester* (hog cholera paratyphoid C) and *S. typhimurium* (enteritidis)

2 Salmonellosis occurs very frequently. Most often it is characterized by diarrhea usually termed food poisoning (p 240) dysentery the trots or ptomaine poisoning. Unless stools cultures are made the diagnosis is not established. By the time the organism is grown subcultured and identified the patient has usually recovered.

3 In the vast majority of instances the attack is relatively benign and self limited without complications or mortality (p 239)

4 On infrequent occasions salmonellosis simulates typhoid fever in duration severity and complications (p 4620)

5 As in typhoid fever epidemics of salmonellosis may exhibit respiratory manifestations including interstitial pneumonitis.

Practical Management

1 Prophylactic use of vaccines such as the previously official typhoid paratyphoid vaccine is no longer advised. Because of the many existent subspecies failure of cross immunization and severity of reactions to injection the Council on Pharmacy and Chemistry 1948 has omitted triple vaccine from its roster.

2 Prevention is best accomplished by hygienic measures in food handling and preparation (p 243)

3 Mild attacks of salmonellosis require only symptomatic therapy.

4 Dysentery like infections are managed as shigellosis (p 4520) since salmonellae also are sensitive to chloramphenicol (p 4279)

5 More severe invasions with generalized bacteremic manifestations are treated as typhoid fever (p 4620)

6 Experimentally antibiotic therapy has been conducted with garlicin and LL 1 neither of which is commercially available

SANDFLY FEVER

[Three Day Fever Pappataci Fever Phlebotomus Fever Mediterranean Dengue Summer Influenza Hundskrankheit Soldaten Fieber Acclimatization Fever Endemic Gastro enteritis Climatic Gastro enteritis Chitral Fever]

Principles of Diagnosis and Therapy

1 Sandfly fever is a benign insect borne viremia with a high morbidity and no mortality

2 Because of its short duration (three days as a rule) only symptomatic therapy is required (p 480)

3 For prophylaxis insect repellents (p 4373) are of greatest value particularly if used after sundown when the Phlebotomus papatasi the vector begins its nocturnal flight

4 Experimentally an irradiated chicken embryo vaccine virus has been tried without success Since multiple attacks of the disease may be experienced even in a single year hope for lasting artificially induced active immunity would appear remote

SARCOIDOSIS

[Besnier Boeck Schaumann's Disease]

Principles of Diagnosis and Therapy

1 Sarcoidosis is a systemic disease which resembles non caseating tuberculosis in its histopathologic characteristics Despite continued interest in sarcoidosis and careful analyses of clinical manifestations the nature of the condition continues to be obscure

2 Most investigators continue to believe that sarcoidosis represents a clinical manifestation of a perverse response of host tissues to the protein of the tubercle bacillus In this the patient exhibits anergy rather than the more commonly encountered hypersensitivity reactions (p 4167) In all observed cases there is absence of skin response to large doses of tuberculin Additionally later development of clinical tuberculosis has been noted

3 Clinical manifestations of sarcoidosis include characteristic dermatoses (Fig 954 p 3263) uveoparotid fever lymphadenopathy enlargement of paratracheal and peribronchial lymph nodes pulmonary infiltrations and pleural and pericardial effusions To this list

ophthalmologists add nodular lesions of eyelids lacrimal glands conjunctivae episclera cornea and especially the uveal tract

4 Laboratory findings include absence of tubercle bacilli in sputum gastric contents and biopsied skin lesions negative response to at least double quantities of tuberculin introduced intracutaneously elevation of serum globulin and positive response to the *Kveim test* The last is an intracutaneous reaction to 0.1 cc of antigen prepared from lymph nodes cutaneous infiltrates or tonsils of patients suffering from the disease The antigen is injected intracutaneously usually on the flexor surface of the forearm A positive reaction consists of an infiltrated area with papule or nodule formation and later superficial necrosis with ulceration The positive response may occur within two weeks but may be delayed for several months In the event of a doubtful response histologic examination of the papule demonstrates its tuberculoid structure resembling the appearance seen in the spontaneously developing sarcoid lesion

5 The prognosis of sarcoidosis is reported universally good so far as survival is concerned However ophthalmic lesions may lead to considerable visual impairment

6 There is general agreement that roentgen therapy and antibiotics including streptomycin accomplish little of benefit As to the use of vitamin D₂ (calciferol) and dihydrotachysterol as in lupus vulgaris (p 4390) there is a general agreement that calciferol merits trial

SCABICIDES

Many preparations are available for the cure of scabies In the following table the merits of the various products are discussed

| SCABICIDES | |
|------------------------|---|
| Preparation | Comment |
| Balsam of Peru | Ineffectual and obsolete |
| Benylate | Lotion benylate N.N.R. is an official 25% emulsion of benzyl benzoate |
| Benzyl benzoate U.S.P. | Use as lotion benylate above Not effective as a pediculicide Avoid use on face Otherwise a preparation of choice |
| Beta naphthol benzoate | More toxic than preferred preparations |
| Cresol | Toxic Obsolete |
| Danish Ointment | Time honored sulfide preparation Not comparable with newer preparations of choice |
| DDT | In 10% talc or solution Not as effective as other preparations of choice |
| Enbin N.N.R. | An oil in water emulsion of chlorophenotane ethyl amino benzoate and benzyl benzoate Avoid contact with eyes and other mucous surfaces Rub about 60 cc over the entire involved area After twenty-four to forty-eight hours remove with soap and water Repeat after one week, if necessary Wear uncontaminated clothing and linen after application. |

SCABICIDES (Continued)

| Preparation | Comment |
|--|--|
| Hexachlorocyclohexane Kwell (C S C) | See kwell 1% hexachlorocyclohexane in vanishing cream base Both scabicial and pediculocidal Preparation of choice |
| Pyrethrum NNR | 27% ointment effective against mites and eggs may produce dermatitis and exfoliation. Occasional sensitivity renders pyrethrum less acceptable than other preparations of choice |
| Ronone (Abbott) | 2% rotenone in a mactilage of quince seed, Irish moss and chloroform Effective as scabicide but not pediculocidal |
| Sulfur | Available as cream foam applicators and ointment Effective as a scabicide but prone to cause treatment dermatitis Prefer less toxic preparations of choice |
| Tar | Not effective and messy Prefer newer preparations of choice |
| Tyroscape (Sharp & Dohme) | 36% solution of benzyl benzoate with 0.053% tyrothencin. Effective both as scabicide and bactericide but not pediculocidal Recommended for combination of scabies and marked secondary pyogenic infections |

SCABIES

[The Itch]

General Principles of Diagnosis and Therapy

1 The diagnosis of scabies is established clinically by finding of characteristic burrows (Fig 900 p 3183) and by identification of the causative mite *Sarcoptes scabiei* (Fig 899 p 3181)

2 Many preparations are available for cure of scabies Success depends more on patient cooperation and prevention of reinfection than on the specific (p 4513)

3 In a certain number of instances scabies is associated with pediculosis and a single product to liquidate both organisms is distinctly valuable In other instances there is secondary pyogenic invasion of scabetic burrow requiring additionally use of an antibiotic No one product is capable of simultaneously attacking acari pediculi and bacteria although kwell is both scabicial and pediculocidal and tyroscape is scabicial and bactericidal The practitioner makes his choice of preparation depending on attendant circumstances

4 The treatment of scabies has been immensely simplified since introduction of 1,2,3,4,5,6-hexachlorocyclohexane marketed as kwell ointment in a 1% vanishing cream base

5 Kwell is both a scabicide and a pediculocide For relief of either disturbance approximately 25 to 50 gm of kwell ointment are rubbed into affected parts after a hot bath Thereafter the patient refrains from bathing or washing for twenty four hours

At the end of this period a full bath is taken and fresh underclothes

night clothes and linen are donned Treatment is repeated in one week if necessary

6 Kwell causes no local irritation Relatively massive doses of kwell however may produce fatal convulsions in animals

7 As second choice suggest the following routine using benzyl benzoate

- (a) Take a warm bath Soap body thoroughly for at least ten minutes particularly scrubbing infected regions
- (b) While body is still warm spread benylate with swab or brush Particularly apply medicament to lesions and nails
- (c) Allow lotion to dry Then reapply to lesions and particularly in and around nails For children use a total of 60 to 90 cc for adults 120 to 180 cc per treatment
- (d) Send clothes and bedding for sterilization
- (e) Twenty four hours after treatment take a warm soak and put on clean clothing
- (f) Repeat treatment if necessary always avoiding application to eyes

8 In addition to treatment of patient other members of the household and contacts must be examined and treated if re infection is to be avoided (ping pong scabies)

9 Treat scabies infestations complicated by bacterial infection with tyroscafe a 36% solution of benzyl benzoate containing 0.053% of tyrothricin

10 Relatively inefficient are older preparations such as balsam of peru and tar and DDT

11 Excessively toxic and relatively ineffectual are cresol Danish ointment pyrethrum sulfur and beta naphthol benzoate

SCARLET FEVER

Principles of Diagnosis and Therapy

1 Scarlet fever is another of the many clinical syndromes produced by hemolytic streptococci (p 171)

2 It differs from other hemolytic streptococcal invasions only in the rather constant appearance of its characteristic exanthem (Fig 18 p 164) and enanthem (Fig 20 p 177)

3 Scarlet fever is no more and no less infectious than other hemolytic streptococcal invasions despite the panic that is usually created by the appearance of the eruption (p 174)

4 Because of the efficacy of antibiotics in the prevention and control of hemolytic streptococcal infections there appears no present necessity for continuing use of the Dick test (p 183) Chemoprophylaxis with penicillin has relegated to obsolescence active immunization with scarlet fever streptococcus toxins both plain and tannic acid precipitated Similarly antibiotics have replaced antitoxic sera previously

used for passive immunization. There seems no present need to consider injections of Scarlet Fever Human Immune Serum NF or of Scarlet Fever Streptococcal Antitoxin USP although large doses of human gamma globulin (40 to 60 cc intramuscularly) appear to prevent complication when given early in the disease.

5 As in rheumatic fever host tissues suffer invasion by hemolytic streptococci and evince allergic hypersensitivity manifestations to microbial antigen.

6 In view of the striking resemblance between the acute attack of scarlet fever and Phase I of the rheumatic fever complex and of the possibility that Phases II, III and IV may follow as in the infection characterized more by arthropathy and circulatory complications it is recommended that the principles of therapy recommended for rheumatic fever be followed exactly in the treatment of scarlet fever (p 4493).

7 In convalescence follow up visits are mandatory in order that the clinician early recognize chronic hypersensitivity manifestations particularly in endocardium and kidneys.

SCHISTOSOMIASIS

[Hemic Distomiasis Bilharziasis Blood Flukes
Bladder Flukes River Flukes]

General Principles of Diagnosis and Therapy

1 One of the few bright reports of World War II is Veterans Administration Technical Bulletin 10-36 which attests to the minor incidence of schistosomiasis in returning soldiers. Except for personnel involved in the military occupation of Leyte and internees at Davao on Mindanao no significant numbers of infestations have been noted. The total of the infected may be less than 5000.

2 The latent phase of Asiatic schistosomiasis produced residual complaints in many of the 300 soldiers examined at Mason General Hospital. These included abdominal discomfort, weakness, headache, myalgia and nervousness. Despite these complaints the men were in excellent physical condition. Approximately one third of readmitted patients had ova in their stools.

Practical Management

Immediate Care

1 The Technical Bulletin of the U S Veterans Administration recommends treatment with tartar emetic reserving stibophen (fuvadin) for second choice.

2 Because of the toxicity of antimonial the undernoted technique must be followed closely.

(a) Make freshly prepared 0.5% solution of antimony potassium in 5% dextrose.

- (b) Discard any solution that is not clear or one which contains sediment
- (c) Sterilize freshly prepared solution by boiling for five minutes
Do not place in autoclave
- (d) Draw solution into barrel and then discard needle replacing it with a fresh needle not contaminated with solution since introduction of even small amounts of tartar emetic into the subcutaneous or perivenous tissues may produce a serious slough
- (e) Slowly introduce the drug intravenously two or three hours after meals Provide for a rest period of an hour after injection Discontinue administration of drug if toxic symptoms develop
- (f) Introduction of 0.6 mg atropine sulfate half hour before injection of antimonial decreases the cough that often results from administration of the ant infective agent

3 For first probatory dose give an exceedingly slow injection of 8 cc

4 If all is well give succeeding injection on alternate days Increase amount of each injection by 4 cc until a dose of 28 cc has been accomplished If the latter amount appears to cause difficulty give two injections of 14 cc each at hourly intervals

5 A complete course consists of a total of 444 cc of 0.5% tartar emetic

6 If significant toxicity occurs give the pharmacologic antidote BAL (p 4251)

Continuing Care (Favorable Course)

1 Reexamine patient after three months and repeat treatment course if necessary

Continuing Care (Unfavorable Course)

1 Reserve stibophen (fuaadin) for those who cannot tolerate antimony potassium tartrate It has less toxicity but also is considerably less effectual

2 Give stibophen by slow intramuscular injection For initial dose deposit 1.5 cc for second dose twenty four hours later introduce 3.5 cc for the third dose give maximum dose of 5 cc at the end of another twenty four hours

3 If preliminary injections are well tolerated inject 5 cc intramuscularly every other day until the patient receives a total of 75 cc

4 In severer and more resistant infections with Japonicum larger doses are required Increase the initial probatory dose to 2 cc the second to 4 cc the third to 6 cc and the fourth to 8 cc given at twenty four hour intervals If the 8 cc dose is tolerated repeat injections every second day until a total of 100 cc has been given

5 Stibophen treatments may be repeated if necessary after a lapse of four weeks Should symptoms of antimony poisoning develop (p 752) use BAL as the pharmacologic antidote (p 4251)

6 In treatment resistant schistosomiasis those with great experience have tried pentavalent arsenicals notably ethylstibamine (neosti

bosan Bayer 693) stilbamine glucoside (neostam) and the aromatic diamidines stilbamidine and pentamidine (as yet available only for investigational use) From present information pentavalent antimonials are not as efficacious as trivalent Experience with aromatic diamidines is insufficient for expression of opinion

7 Under experimental investigation is a new antibilharzial drug known as miracid D (nilodin), a thioxanthone derivative

Miracid D is given in minimum effective doses of 5 mg per kilo every twelve hours for five days Toxic symptoms are slight but the efficacy of the drug appears to be erratic curing some patients and failing to cure others Further reports on miracid D will be awaited with great interest

SEDATIVES AND HYPNOTICS

Chloral Hydrate

Increasing experience with sedatives and hypnotics has fortified our personal opinion that chloral hydrate USP is the preparation of choice (p 3836) Toxic effects on cardiovascular and respiratory systems greatly exaggerated have not occurred within the realm of our experience Nor do we find chloral prescriptions particularly irritant to the stomach provided they are given well diluted with warm fluid

On the positive side of the ledger sedative doses of 0.3 gm (5 grains) and hypnotic doses of 0.6 to 0.1 gm (10 to 15 grains) are almost uniformly effectual and virtually devoid of toxicodermic side reactions idiosyncrasy and toxicity When economic factors are a consideration (as in the case of large institutions and those practitioners who dispense as well as prescribe) the lesser cost of chloral as compared with the more widely advertised barbiturates is a significant consideration

Antihistamines

Most antihistamines are additionally sedative and hypnotic (p 4212) For waking hours the sedative action of antihistamines is a deterrent at bedtime however sedation and hypnosis are added advantages particularly when allergic manifestations such as itching prevent sleep

Barbiturates

In addition to the list of barbiturates in Table 215 (p 3836) the Council on Pharmacy and Chemistry has accepted evipal sodium (hexylbarbital) delvinal (vinbarbital sodium) and butalol (butabarbital sodium) Evipal is available in ampuls containing 0.5 and 1 gm in powder form to be dissolved in sterile distilled water for intravenous anesthesia of short duration delvinal is available in capsules containing 0.03 0.1 and 0.2 gm and also in sterile solution of which each cc

contains 65 mg for parenteral injection butisol is marketed in capsules containing 0.1 gm and as an elixir in which each cc is the equivalent of 0.2 gm. The actions of none of these preparations differs essentially from those previously described.

SERUM ALLERGY

[Serum Sickness]

Serum sickness is a less dramatic manifestation of allergic hypersensitivity than anaphylactic shock (p 4187). The management of this allergic hypersensitivity follows along the lines established for prevention of anaphylactic shock (p 4189). Additionally there is greater opportunity for the practitioner to provide palliation through administration of adrenergic and antihistamine.

Principles of Diagnosis and Treatment

1 Prevent by adherence to the previous schedule (p 4190)

2 If prophylactic measures (pyribenzamine or benadryl for two weeks following the last injection of biological) have failed increase dose of prescribed preparation to tolerance (total 200 to 800 mg daily). Should hypersensitivity manifestations persist or should the patient develop side effects from antihistamine switch to a substitute such as neoantergen, histadyl, decapryn, diatrin, chlorotrimeton, hydryllin, neo-hexamine, tagethen, thenylene, thephorin or trimeton (Table p 4212).

3 In the presence of urgent symptoms (angioneurotic edema of tongue or larynx) inject benadryl intramuscularly or intravenously using 2 to 5 cc (20 to 50 mg). Supplement antihistamine effect with subcutaneous or intramuscular injection of adrenergic (epinephrine hydrochloride 1:1000, 1% neosynephrin or 3% ephedrine).

4 In the presence of respiratory embarrassment prepare for emergency tracheotomy (pp 3958, 3993 and 3957) preferably after transfer of patient to hospital.

5 If the combination of antihistamine and adrenergic fails set up an intravenous drip and deliver 1 gm of procaine hydrochloride (novocaine) in 500 cc of physiologic saline solution (add 100 cc of 1% procaine or 50 cc of 2% procaine to sufficient diluent to make a volume of 500 cc).

6 In the event that serum sickness develops without previous prophylactic use of antihistamine inaugurate active treatment with oral pyribenzamine or benadryl.

(a) If symptoms are not severe start with 50 mg four times daily increasing the dose if manifestations of hypersensitivity fail to disappear and the patient does not exhibit untoward manifestations of antihistamine therapy (p 4214).

(b) If symptoms are moderately severe start with maximum daily doses of antihistamine i.e. 600 to 800 mg and decrease the dose as soon as hypersensitivity appears to be controlled (p 4216).

(c) If symptoms are of maximum severity such as threat to the respiratory tract apply for cortone or ACTH and in meantime repeat directions 3 5 and 4 above

SHIGELLOSIS

[Bacillary Dysentery]

Principles of Diagnosis and Therapy

1 Bacillary dysentery is a common cause for the ubiquitous stools suffered at one time or another by each of us

2 The bacteriologic diagnosis is rarely established since it requires stool cultures and subculture, by an experienced bacteriologist (p 140)

3 The shigelloses include several subvarieties. Each is antigenically complex hence serologic findings are difficult of interpretation (p 245) the prophylactic vaccine (Parke Davis) is valueless since it is incapable of producing cross immunity and antiserums whether monovalent or polyvalent have limited value

4 Fortunately shigellas are sensitive to chloramphenicol aureomycin streptomycin and soluble and insoluble sulfonamides in order of their usefulness

Practical Management

Prophylaxis

1 In the presence of an epidemic of bacillary dysentery treat possible contacts as if they had acute symptoms using methods of *Immediate Care* as outlined later

2 Notify Health officers who will institute a search for carriers particularly among food handlers

Immediate Care

1 Most patients with shigellosis suffer only mild clinical manifestations. They are treated while ambulatory. Those with moderate or severe symptoms require nursing care at home or preferably in the hospital (p 67)

2 Whether symptoms are acute or chronic mild or severe the organism must be attacked vigorously to prevent later difficulties and protect the community. Order a priming dose of 60 to 100 mg per kilogram of body weight of chloramphenicol (4 to 7 gm for average adult weighing 150 pounds). Give 2 products every few minutes with milk ice cream cream cheese soup or fruit juice

3 If economy demands substitute oral sulfonamide. Give equal parts of sulfadiazine or sulfamerazine with bicarbonate of soda if a soluble product is desired and thalamyd for the insoluble preparation of choice

4 If patient is dehydrated give an infusion of 2 units of plasma (p 3778) followed by 1000 cc of 5% dextrose in saline

5 If there is gastric intolerance precluding oral use of antibiotic inject intramuscularly 1 gm of streptomycin or give intravenously 50 to 100 mg of aureomycin hydrochloride (p 4241) or 2.5 gm each of sodium sulfamerazine and sodium sulfadiazine diluted to at least 200 cc with saline or molar lactate

6 Administer prophylactic doses of antihistamine preferably 200 mg daily of pyribenzamine or benadryl

Continuing Care (Favorable Course)

1 As soon as stomach is tolerant order maintenance doses of chloramphenicol spreading the amount of the priming dose in 4 equal portions over twenty four hours

2 Encourage a high caloric intake of soft cooked foods or liquids. Low residue diets of boiled milk and rice, cocoa, mashed potato, spaghetti and purees are most acceptable

Continuing Care (Unfavorable Course)

1 If symptoms persist but stomach is tolerant double dose of chloramphenicol or give an equal amount of aureomycin additionally

2 If chloramphenicol is not tolerated substitute aureomycin in the same quantity

3 If neither product is tolerated inject intramuscularly 0.5 gm streptomycin thrice daily or sodium salts of soluble sulfonamide as previously described

Continuing Care (Progressively Unfavorable Course)

1 Set up an intravenous drip. Continue chloramphenicol or aureomycin orally or streptomycin intramuscularly. Supplement the tolerated antibiotic with intravenous sulfonamide. Give a priming dose as previously described. Maintain levels with introduction alternately of 2.5 gm of sodium sulfadiazine or sodium sulfamerazine every six or eight hours as indicated

2 Watch urine and blood for evidences of sulfonamide toxicity (p 94)

3 In desperation consider injection of Antidysentery Heterologous Serum (Polyvalent) N N R (Parke Davis) Marketed in 20 cc vials. 80 to 100 cc may be introduced in the intravenous drip after skin testing (p 555) desensitization if necessary (p 4191) and dilution to 500 cc with saline

4 Obsolete is dysentery bacteriophage

5 Available only for investigation is garlicin

6 Persist with antihistamine for at least two weeks after discontinuance of antibiotic

(c) If symptoms are of maximum severity such as threat to the respiratory tract apply for cortone or ACTH and in meantime repeat directions 3 5 and 4 above

SHIGELLOSIS

[Bacillary Dysentery]

Principles of Diagnosis and Therapy

- 1 Bacillary dysentery is a common cause for the ubiquitous trots suffered at one time or another by each of us
- 2 The bacteriologic diagnosis is rarely established since it requires stool cultures and subcultures by an experienced bacteriologist (p 140)
- 3 The shigelloses include several subvarieties Each is antigenically complex hence serologic findings are difficult of interpretation (p 245) the prophylactic vaccine (Parke Davis) is valueless since it is incapable of producing cross immunity and antiserums whether monovalent or polyvalent have limited value
- 4 Fortunately shigellas are sensitive to chloramphenicol aureomycin streptomycin and soluble and insoluble sulfonamides in order of their usefulness

Practical Management

Prophylaxis

- 1 In the presence of an epidemic of bacillary dysentery treat possible contacts as if they had acute symptom using methods of *Immediate Care* as outlined later
- 2 Notify Health officers who will institute a search for carriers particularly among food handlers

Immediate Care

- 1 Most patients with shigellosis suffer only mild clinical manifestations They are treated while ambulatory Those with moderate or severe symptoms require nursing care at home or preferably in the hospital (p 67)
- 2 Whether symptoms are acute or chronic mild or severe the organism must be attacked vigorously to prevent later difficulties and protect the community Order a priming dose of 60 to 100 mg per kilogram of body weight of chloramphenicol (4 to 7 gm for average adult weighing 150 pounds) Give 2 products every few minutes with milk ice cream cream cheese soup or fruit juice
- 3 If economy demands substitute oral sulfonamide Give equal parts of sulfadiazine or sulfamerazine with bicarbonate of soda if a soluble product is desired and thalamyd for the insoluble preparation of choice

- 8 Investigate possibility of parathyroid tumor (p 1233) Look for primary growth in breast prostate or digestive tract
- 9 With data at hand consider differential diagnosis of skeletal tumors as listed in Table 150 p 2836
- 10 Refer patient to orthopedic surgeon for bone biopsy
- 11 Discuss surgical procedure

SMALLPOX

[Variola Alastrim Cotton Fox Para Smallpox]

Principles of Diagnosis and Therapy

- 1 Smallpox is a completely preventable disease There is no excuse for epidemics occurring in any civilized community (p 424)
- 2 Prophylactic vaccination with the virus of cowpox provides effective cross immunization (Fig 69 pp 430-431 and p 428) Vaccination is recommended as a mandatory procedure in infancy and every three to five years thereafter (p 4631)
- 3 Though statistically uncommon the gravity of postvaccinal encephalopathy and myelopathy is so great that concurrent administration of antihistamine for prevention of the tuberculin type of hypersensitivity reaction is warranted in every instance
- 4 As yet there is no specific antibiotic for use in the treatment of smallpox Nevertheless prophylactic use of penicillin aureomycin or chloramphenicol is highly recommended If these anti infective agents do nothing else they prevent or mitigate secondary infections particularly of cutaneous pustules In addition chloramphenicol and aureomycin are virucidal and may possibly have some specific efficacy if given in priming and daily maintenance doses as large as 100 mg per kilogram of body weight (7 gm for the average adult weighing 150 lbs)

SNAKE BITE

Principles of Diagnosis and Therapy

- 1 There are in excess of 2000 species of snakes inhabiting the earth's surface and waters The terrestrial population of snakes must be enormous as any motorist who has traveled the roads of southern and western United States can attest
- 2 Of the snake population relatively few are venomous In North America the poisonous element is represented by corals copperheads water moccasins and rattlers In South and Latin Americas snake populations are very similar except that they bear different names as fer de lance barba amarilla cascabel bushmaster jararaca racucu urutu and coralillos (Coraes)

SILVER

Obsolete for internal use silver also is being replaced for local and topical application in the prophylaxis of ophthalmia neonatorum (p 4350) and the treatment of upper respiratory infections by antibiotics such as penicillin bacitracin and tyrothricin

SIXTH DISEASE

[Exanthema Subitum Roseola Infantum Rose Rash Pseudorubella]

Principles of Diagnosis and Therapy

- 1 Roseola infantum in the opinion of experts is an almost universal infection for children under five years of age
- 2 A viremia sixth disease has an incubation period of ten to fifteen days with a single attack conferring permanent immunity
- 3 The febrile period lasts for three to nine days and terminates with appearance of the morbilliform eruption (p 412) Mild catarrhal otitis is the principal accompanying lesion
- 4 There is no available successful method of prevention or treatment of exanthema subitum Fortunately the disease has neither significant complications nor mortality

SKELETAL SYSTEM NEOPLASMS OF

Many neoplasms of bone are observed before subjective symptoms arise All are clearly demonstrable by simple roentgenography greatly facilitating diagnosis

Practical Management

- 1 During routine examination make note of any bony swelling or tenderness
- 2 In the presence of visible or palpable tumor of bone consider differential diagnosis of osseous swellings (p 2844)
- 3 Get blood for serodiagnosis of syphilis and malignancy (p 4431) acid phosphatase calcium total protein albumin-globulin ratio and erythrocyte sedimentation rate
- 4 Inquire concerning pain Consider differential diagnosis of ostealgia (p 281)
- 5 Get x rays of the chest particularly for evidences of tuberculosis
- 6 Get x rays of the bony tumor and compare with illustrative radiographs demonstrating bony malignancy (Figs 714-724 pp 2837-2848)
- 7 Look for evidences of pathologic fracture (p 2846)

- 8 Investigate possibility of parathyroid tumor (p 1233) Look for primary growth in breast prostate or digestive tract
- 9 With data at hand consider differential diagnosis of skeletal tumors as listed in Table 150 p 2836
- 10 Refer patient to orthopedic surgeon for bone biopsy
- 11 Discuss surgical procedure

SMALLPOX

[Variole Alastrum Cotton Pox Para Smallpox]

Principles of Diagnosis and Therapy

1 Smallpox is a completely preventable disease There is no excuse for epidemics occurring in any civilized community (p 424)

2 Prophylactic vaccination with the virus of cowpox provides effective cross immunization (Fig 69 pp 430-431 and p 428) Vaccination is recommended as a mandatory procedure in infancy and every three to five years thereafter (p 4631)

3 Though statistically uncommon the gravity of postvaccinal encephalopathy and myelopathy is so great that concurrent administration of antihistamine for prevention of the tuberculin type of hypersensitivity reaction is warranted in every instance

4 As yet there is no specific antibiotic for use in the treatment of smallpox Nevertheless prophylactic use of penicillin aureomycin or chloramphenicol is highly recommended If these anti-infective agents do nothing else they prevent or mitigate secondary infections particularly of cutaneous pustules In addition chloramphenicol and aureomycin are virucidal and may possibly have some specific efficacy if given in priming and daily maintenance doses as large as 100 mg per kilogram of body weight (7 gm for the average adult weighing 150 lbs)

SNAKE BITE

Principles of Diagnosis and Therapy

1 There are in excess of 2000 species of snakes inhabiting the earth's surface and waters The terrestrial population of snakes must be enormous as any motorist who has traveled the roads of southern and western United States can attest

■ Of the snake population relatively few are venomous In North America the poisonous element is represented by corals copperheads water moccasins and rattlers In South and Latin Americas snake populations are very similar except that they bear different names such as fer de lance barba amarilla cascabel bushmaster jararaca jararacu urutu and coralillos (Coraes)

SILVER

Obsolete for internal use silver also is being replaced for local and topical application in the prophylaxis of ophthalmia neonatorum (p 4350) and the treatment of upper respiratory infections by antibiotics such as penicillin bacitracin and tyrothricin

SIXTH DISEASE

[Exanthema Subitum Roseola Infantum Rose Rash Pseudorubella]

Principles of Diagnosis and Therapy

- 1 Roseola infantum in the opinion of experts is an almost universal infection for children under five years of age
- 2 A viremia sixth disease has an incubation period of ten to fifteen days with a single attack conferring permanent immunity
- 3 The febrile period lasts for three to nine days and terminates with appearance of the morbilliform eruption (p 412) Mild catarrhal otitis is the principal accompanying lesion
- 4 There is no available successful method of prevention or treatment of exanthema subitum Fortunately the disease has neither significant complications nor mortality

SKELETAL SYSTEM NEOPLASMS OF

Many neoplasms of bone are observed before subjective symptoms arise All are clearly demonstrable by simple roentgenography greatly facilitating diagnosis

Practical Management

- 1 During routine examination make note of any bony swelling or tenderness
- 2 In the presence of visible or palpable tumor of bone consider differential diagnosis of osseous swellings (p 2844)
- 3 Get blood for serodiagnosis of syphilis and malignancy (p 4431) acid phosphatase calcium total protein albumin-globulin ratio and erythrocyte sedimentation rate
- 4 Inquire concerning pain Consider differential diagnosis of ostealgia (p 281)
- 5 Get x rays of the chest particularly for evidences of tuberculosis
- 6 Get x rays of the bony tumor and compare with illustrative radiographs demonstrating bony malignancy (Figs 714-724 pp 2837-2848)
- 7 Look for evidences of pathologic fracture (p 2846)

acteristic tail rattle and back markings in the shape of a baseball diamond copperheads are the characteristic copper color with alternating dark and light stripings water moccasins are an over all deep green with lighter green irregular bands Most if not all Solenoglyphs (which include copperheads water moccasins and rattlers) have a characteristic hole or pit between nostrils and each eye

3 While efforts are being made to obtain and identify the offending snake the local site is examined for evidences of actual penetration since the character of the bite may suggest whether or not a venomous snake has been the responsible agent Non venomous snakes as a rule inflict a circular wound that is due wholly to bites from their teeth By contrast the venomous snake bite has lateral wounds outside of the circle that represent penetration of venomous fangs Finally the North American physician is assisted in his diagnosis by the local inflammatory reaction The North American rattler inflicts a wound that is painful swells rapidly and shows evidences of local hemorrhage due to presence of hemolysin and lysocytin By contrast the South American physician is faced with the problem of a painless and innocent looking wound which in no way gives testimony to the virulence of the neurocytolysin that has been injected

4 If the physician is certain that the bite has been inflicted by a nonvenomous snake treatment consists wholly in reassurance local application of antiseptic to the wound and use of a sterile dressing more for psychologic than surgical purpose

5 The treatment of snake bite due to a venomous species is considerably more complicated calling for both local and systemic therapy

6 Local treatment is facilitated if the emergency bag (p 3751) contains first aid equipment such as the commercially available Compakit (Cutter) Only slightly larger than the shell of a shot gun the Compakit contains a lymph constrictor a knife three suction cups antiseptic and full directions for use The lymph constrictor is applied 1½ inches above the wound to inhibit absorption of venom into the blood stream Fang marks and knife blade are painted with antiseptic after which cross cuts are made ¼ inch in length and ¼ inch in depth directly over each fang mark The mouth of suction cups and surrounding skin are moistened after which suction cups are applied to incisions and steady continuous suction is maintained

7 If it is necessary to improvise apply a tourniquet or ligature proximal to the bite With any available cutting edge incise fang bites to a depth of at least ¼ inch flush with any handy fluid and apply suction orally through a few layers of transposed gauze

8 If the patient is in severe pain or in a panic state sedate with 60 mg (1 grain) of phenobarbital or 50 to 100 mg of demerol given orally or by injection

9 If the patient is limp or comatose (as observed in rattlesnake bites of South America) avoid sedatives including alcohol

10 If not contained in emergency bag send for Crotalus anti toxin (North American snake bite serum) USP This product marketed by Lederle and Wyeth is an antitoxic equine serum prepared by

3 Of the snakes of the Americas the North American coral and the Latin American corallilos (coraes) are classified as proteroglypha. This species also includes sea snakes of Pacific and Indian Oceans cobras of India Burma and Malay tigers puff adders and copperheads of Australia and mambas and spitting cobras of Africa. For these snakes no antivenin has as yet been perfected.

4 Copperheads water moccasins and rattlers of the Americas are included in the Solenoglypha. This species also embraces previously mentioned venomous snakes of Latin America green pit vipers of As a habus of Japan daboias of India and viper puff adders and gaboom vipers of Africa. For bites of Solenoglypha crotalus antivenin is available.

5 Considering the total snake population of the Americas bites by venomous snakes are relatively uncommon. It is estimated that no more than 2000 to 3000 occur annually in the United States of America with a mortality rate of 10 to 35 per cent. The majority of American snake bite deaths probably occur in Florida and Texas where rattlers are particularly venomous. Except in these areas the practitioner is more likely to be confronted with the problem of treating an anxiety or panic reaction than an actual snake bite poisoning.

6 The venom of snakes is variously constituted. Among preformed toxins are neurocytolyzin hemolyzin hemocoagulin proteolysin and cytolsyn. In addition lysocytin is formed at the point of contact as the result of reaction of venom with local tissues.

7 Since proportions of toxin in venom vary with different species snake bite is not manifested by a single clinical entity. Thus the South American rattler injects mostly neurocytolsyn. The victim notes little local reaction and few immediate systemic manifestations. When evidences of poisoning appear after several hours they are particularly virulent with increasing somnolence usually followed by a terminal coma. By contrast bite of the North American rattler produces marked local reaction with intense pain swelling and ecchymosis rapidly followed by systemic manifestation including vomiting somnolence and hemorrhages from any body cavity. The insidious course of South American snake bite poisoning probably contributes to the high mortality whereas the intense local reaction to North American rattlers stimulates intensive first aid treatment and may account for the appreciably lower mortality rate.

Practical Management

1 Because of the panic reaction that accompanies snake bite the practitioner's first duty is to determine whether or not there has been an actual bite and whether or not the offending snake belongs in the venomous group.

2 Identification of the snake must rest on first hand evidence. The practitioner should familiarize himself with venomous species of his neighborhood. Corals are characterized by circular rings of blue yellow and red striped as in a barber pole rattlers have the char

SPIROCHETAL JAUNDICE

[Weil's Disease Leptospirosis Icterohemorrhagica Infectious Jaundice]

Principles of Diagnosis and Therapy

1 The syndrome previously labeled infectious jaundice or Weil's disease (p 360) is better termed spirochetel jaundice to distinguish it from homologous serum jaundice and from virus hepatitis (p 4635) formerly called catarrhal jaundice (p 1951)

2 Of the three types of specific hepatitis homologous serum jaundice is clearly recognized by the history of antecedent blood or plasma infusion spirochetel jaundice rarely observed in the United States is confined mostly to bargemen sewer workers wharf men fish workers miners slaughterhouse workers and others exposed to rats and responds almost specifically to penicillin virus hepatitis commonly encountered in private practice is resistant to antibiotics but may be aborted or modified if treated with gamma globulin in the long pre icteric period

Practical Management

1 Using what are now regarded as inconsequential doses of penicillin (15 000 to 50 000 units) specific therapeutic results have been observed in experimental and clinical spirochetel jaundice

2 With this background the physician currently confronted with the problem of treating spirochetel jaundice may confidently deposit 600 000 units of procaine penicillin G in aqueous suspension each day for at least a week

3 As a supplement to penicillin transfusions of whole blood from donors who have had Weil's disease are regarded by Patterson as the sheet anchor in the treatment of the severely ill patient

4 Sulfonamides and arsenicals are not effective Heterologous equine antileptospiral serum (p 4261) is obsolete Aureomycin and chloramphenicol merit trial on the basis of laboratory evidence of organism sensitivity

SPIROCHETICIDES

The efficacy and safety of penicillin as a spirocheticide constitutes one of the great contributions of the Golden Era of Therapeutics For ease of administration and safety there is nothing comparable Whether older products such as arsenic and bismuth will be retained to supplement penicillin therapy remains for the future to decide Certainly they add risk Whether they will give a sufficient increase in the percentage of cures to offset hazards can only be determined statistically after the lapse of a few years (p 4554)

immunization against the venom of snakes of the crotalus family which includes rattlers water moccasins and copperheads but not coral snakes

The combination package of antivenin contains one vial of antitoxic serum one vial of 15 cc of pyrogen free sterile distilled water for use as a diluent one sterile needle one vial of normal horse serum diluted 1 10 for ophthalmic and intracutaneous testing and for making dilutions when desensitization is required and one applicator of iodine solution

11 As soon as antivenin has been obtained perform ophthalmic and intracutaneous tests for sensitivity with a 1 10 dilution (p 555)

12 While these data are being determined question patient as to sensitivity (p 4187) Inject at least 5 cc of 1% benadryl intramuscularly to prevent hypersensitivity reactions when antivenin is injected

13 If the patient has no significant hypersensitivity introduce 15 to 20 cc of antivenin in the vicinity of the bite and deposit 30 to 50 cc intramuscularly in buttocks or anterior abdominal wall Be prepared to repeat these injections every thirty to sixty minutes until symptoms subside

14 If the patient is hypersensitive weigh the relative risks of allergic phenomena and of snake bite poisoning

If necessary as a life saving measure antivenin may have to be given to the hypersensitive Under these circumstances inject benadryl every twenty to thirty minutes and keep epinephrine hydrochloride (1 1000) available in a second syringe for subcutaneous or intramuscular introduction if necessary Cautiously introduce intracutaneously 0.1 cc of 1 10 dilution of antivenin When the response has been determined choose other sites for injection and increase amounts to 0.2 cc if possible

15 As soon as undiluted antivenin is tolerated intracutaneously switch to subcutaneous or intramuscular injections meanwhile continuing benadryl and adrenergic as needed

16 In the treatment of bites by North American rattlers discontinue injections shortly after systemic symptoms appear controlled In the instance of South American rattlers however the insidious nature of the poisoning makes it imperative to continue therapy in the absence of overt clinical manifestations

17 If facilities are available and symptoms warrant set up an intravenous drip with 5% dextrose in saline To this add diluted antivenin if there is no apparent sensitivity In the event of anaphylactic phenomena inject epinephrine hydrochloride (1 1000) directly into the rubber tubing below the drip for immediate intravenous introduction

With these modalities the organism destroys erythrocytes leukocytes and fixed cells and produces violent gastro intestinal distress Its coagulase prevents anti infective agents from diffusing into the lesion while spreading factor permits bacterial body and its toxin to extend by continuity and contiguity

5 In addition to these offensive qualities the staphylococcus is possessed of a remarkably adaptive mechanism It rapidly develops defenses against antibiotic agents particularly sulfonamides and penicillin By these means it assumes the property of bacterial fastness and defies destruction by intended therapeutic agents (p 4133)

6 Staphylococcic invasiveness is not always determined by bacterial virulence and adaptability Even feebly offensive organisms such as the albus strain may gain access to host tissues when defenses are enfeebled Locally this may be the result of any break in the integrity of skin or mucous surface inadequacy of the circulation or maceration particularly resulting from a primary fungus infection etc Systemically general resistance may be enfeebled as the result of prematurity senility chronic or wasting disease malnutrition anemia and hyperglycemia or other metabolic disturbances

7 Staphylococci may cause clinical manifestations through ingestion of preformed toxin (p 240) production of local pyoderms (p 3248) and initiation of mucosal lesions in the upper respiratory tract including nasopharyngitis accessory nasal sinusitis tonsillitis pneumonitis lobar pneumonia otitis media mastoiditis otogenic and rhinogenic meningitis and conjunctivitis With markedly increased virulence or extremely lowered host resistance staphylococci may give rise to bacteremias with secondary metastatic furuncles and areas of suppuration in lungs kidneys perinephric tissues bones and joints Finally a particularly resistant type of subacute bacterial endocarditis is produced when organisms of low virulence colonize on damaged heart valves (p 1021)

8 Staphylococci exhibit marked sensitivity to sulfonamides penicillin bacitracin tyrothricin aureomycin chloramphenicol and streptomycin Successful management however requires more than casual introduction of the potentially effective antibiotic agent To prevent survival of resistant or fast bacterial strains the attack must be launched with an overwhelming loading dose high antibiotic levels must be maintained for a prolonged period in order successfully to deal with hardy strains of surviving organisms host resistance must be reinforced by elimination of unfavorable factors and by strengthening defensive and offensive qualities Finally alternate or supplementary antibiotics must be available to eliminate fast strains which have successfully evaded destruction by the original therapeutic agent

9 The recovered patient does not develop a natural active immunity to the invading staphylococcus Neither can an artificially produced active immunity be accomplished with the many available commercial preparations none of which have Council approval Included in this list of ineffective and mostly obsolete products are staphylococcus bacteriophage staphylococcus immunogen staphylococcus streptococcus

SPIROCHETICIDES

| Preparation | Comment |
|-----------------|--|
| Arsenic | Trivalent organic preparations powerful but toxic despite antidotal efficacy of BAL (p 4251) If used, prefer oxophenarsine (mapharsen) and dichlorophenarsine (cloarsen) Pentavalent products (Tryparsamide) toxic and ineffectual |
| Aureomycin | Somewhat effective but not comparable to penicillin |
| Bismuth | Feebly effective but may supplement arsenic and perhaps penicillin |
| Chloramphenicol | Somewhat effective but not comparable to penicillin |
| Gold | Obsolete |
| Iodide | Of use only for resolution of gumma (p 334) |
| Penicillin | Most effective and safest. Use massive dosages Reserve therapy with arsenic and bismuth for treatment failures (p 4358) |
| Tryparsamide | See Arsenic |

SPOROTRICHOSIS

Principles of Diagnosis and Therapy

1 Sporotrichosis is a systemic fungus infection (p 495) similar to actinomycosis

2 In most instances the diagnosis is established by isolation of the filamentous spore bearing fungus (p 487) from the initial lesion or chancre usually observed on fingers or dorsum of the hand (Fig 967 p 3312)

3 Sporotrichosis is said to respond readily to iodides administered orally Potassium iodide is recommended in slowly increasing doses up to 4 to 6 gm daily Recurrence can be avoided by extending treatment for one or two months after apparent cure

4 Iodide resistant infections may respond to sulfonamide

5 Fluctuant abscesses may be punctured but not incised

6 Roentgen therapy may be considered as in actinomycosis (p 4141)

STAPHYLOCOCCAL INFECTIONS

Principles of Diagnosis and Therapy

1 The ubiquitous staphylococcus may be grown from any skin or mucous surface (p 151)

2 Mere bacterial demonstration of staphylococci does not necessarily imply pathogenicity Most often the organism is a contaminant or a secondary invader

3 Primary staphylococcal pathogenicity is dependent on assumption of increased virulence by the invader and/or diminished host resistance

4 The virulent staphylococcus may secrete hemolysin leukocidin, necrotizing principle enterotoxin coagulase and spreading factor

With these modalities the organism destroys erythrocytes leukocytes and fixed cells and produces violent gastro-intestinal distress. Its coagulase prevents anti infective agents from diffusing into the lesion while spreading factor permits bacterial body and its toxin to extend by continuity and contiguity.

5 In addition to these offensive qualities the staphylococcus is possessed of a remarkably adaptive mechanism. It rapidly develops defenses against antibiotic agents particularly sulfonamides and penicillin. By these means it assumes the property of bacterial fatness and defies destruction by intended therapeutic agents (p 4133).

6 Staphylococcic invasiveness is not always determined by bacterial virulence and adaptability. Even feebly offensive organisms such as the albus strain may gain access to host tissues when defenses are enfeebled. Locally this may be the result of any break in the integrity of skin or mucous surface inadequacy of the circulation or maceration particularly resulting from a primary fungus infection etc. Systemically general resistance may be enfeebled as the result of prematurity senility chronic or wasting disease malnutrition anemia and hyperglycemia or other metabolic disturbances.

7 Staphylococci may cause clinical manifestations through ingestion of preformed toxin (p 240) production of local pyoderms (p 3248) and initiation of mucosal lesions in the upper respiratory tract including nasopharyngitis accessory nasal sinusitis tonsillitis pneumonitis lobar pneumonia otitis media mastoiditis otogenic and rhinogenic meningitis and conjunctivitis. With markedly increased virulence or extremely lowered host resistance staphylococci may give rise to bacteremias with secondary metastatic furuncles and areas of suppuration in lungs kidneys perinephric tissues bones and joints. Finally a particularly resistant type of subacute bacterial endocarditis is produced when organisms of low virulence co'cnize on damaged heart valves (p 1021).

■ Staphylococci exhibit marked sensitivity to sulfonamides penicillin bacitracin tyrothricin aureomycin chloramphenicol and streptomycin. Successful management however requires more than casual introduction of the potentially effective antibiotic agent. To prevent survival of resistant or fast bacterial strains the attack must be launched with an overwhelming loading dose high antibiotic levels must be maintained for a prolonged period in order successfully to deal with hardy strains of surviving organisms. Host resistance must be reinforced by elimination of unfavorable factors and by strengthening defensive and offensive qualities. Finally alternate or supplementary antibiotics must be available to eliminate fast strains which have successfully evaded destruction by the original therapeutic agent.

9 The recovered patient does not develop a natural active immunity to the invading staphylococcus. Neither can an artificially produced active immunity be accomplished with the many available commercial preparations none of which have Council approval. Included in this list of ineffective and mostly obsolete products are staphylococcus bacteriophage staphylococcus immunogen staphylococcus-streptococcus

vaccine combined staphylococcus toxoid and staphylococcus vaccines both autogenous and stock

10 Passive immunization using staphylococcus ant toxin is also a feeble and now obsolete therapeutic effort

11 In striking contrast to discouraging results with vaccines and serums is the wide choice of potent antibiotic agents For local and topical therapy we favor bacitracin and tyrothricin in solution or ointment form Both products have great potency negligible tendency for the production of hypersensitivity and negligible toxicity unless introduced parenterally (p 4247) For systemic use we favor penicillin for first choice with aureomycin or chloramphenicol for supplementary or alternate prescription We oppose local use of sulfonamide for reasons elsewhere given in detail (p 4544) We reserve systemic sulfonamide therapy for staphylococcal infections if failure is encountered with penicillin aureomycin and chloramphenicol Sulfonamide has inherent toxicity there is a marked tendency for bacteria to become fast and finally both acute histamine type and chronic tuberculin type allergic hypersensitivity manifestations occur more commonly with sulfonamides than with any other antibiotic (p 4179)

Practical Management

Prophylaxis

1 For reasons previously stated place no reliance on injection of staphylococcal antigen for the production of artificial active immunity In the rare instance where a known heavy contamination with staphylococci has occurred (as surgically when a finger is pricked during incision and drainage of a pyoderm) resort to chemoprophylaxis Introduce intramuscularly 300 000 to 600 000 units of crystalline procaine penicillin G in aqueous suspension and repeat at 12 to 24 hour intervals for a period of three to five days

Immediate Care

1 Of clinical disturbances caused by staphylococci food poisoning alone requires no specific therapy The violence of the ensuing vomiting and diarrhea can be counted on to remove preformed toxin and since bacterial body has not been introduced there is no rationale for use of antibiotic agents

2 Except in the management of the relatively mild and isolated pyoderm (furuncle) do not place main reliance on local or topical therapy There is no objection to wet dressings or ointments of bacitracin (p 4247) or tyrothricin (p 4622) but we oppose direct introduction of these or other antibiotics into the inflammatory area If antibiotic is introduced parenterally it is best given in an indifferent area using a dose sufficiently large to provide for adequate antibiotic levels in infected as well as other tissues

3 With the exceptions above noted favor parenteral injection of a massive loading dose of penicillin Depending on the severity and

extent of the lesion and the state of host resistance introduce an intramuscular priming dose of 300 000 to 1 200 000 units of crystalline procaine penicillin G in aqueous or oily suspension the latter with or without 2% aluminum monostearate Maintain blood and tissue penicillin levels with subsequent injections of amounts equal to the priming dose at 8 12 or 24 hour intervals as indicated by the clinical response

4 In the penicillin sensitive substitute aureomycin or chloramphenicol Give a heavy loading dose approximating 100 mg per kilo gram of body weight (7 gm for the average adult weighing 150 lbs) Give 2 products every few minutes with fruit juice ice cream milk carbonated water tea or broth until the entire quantity has been ingested If the stomach is intolerant of aureomycin substitute chloramphenicol If neither is tolerated improvise a solution by dissolving double the oral dose in warm saline Introduce rectally by means of a funnel attached to an inserted male catheter Hold buttocks firmly together for at least fifteen minutes to prevent expulsion particularly in children

5 If aureomycin and chloramphenicol are not tolerated rectally or orally consider intravenous injection of 100 to 500 mg of the special aureomycin hydrochloride prepared for intravenous use Dissolve in 0.75% sodium carbonate solution as provided by the manufacturer

■ For third choice in the initial treatment of staphylococcal infection give soluble sulfonamide A satisfactory loading oral dose is 2 to 3 gm each of sulfadiazine and sulfamerazine with a teaspoonful of bicarbonate of soda For intravenous introduction dissolve 2.5 gm each of sodium sulfadiazine and sodium sulfamerazine in 200 to 500 cc of sterile physiologic saline or molar lactate

7 Concurrently with penicillin or sulfonamide give prophylactic antihistamine therapy using daily doses of 200 to 400 mg of pyribenzamine or benadryl Continue for at least two weeks after the last dose of antibiotic

8 In localized pyoderms or other staphylococcal infections look for neighboring sites of lessened resistance Seek areas of dermatophytosis and treat concurrently with fungicides (p 4331) evaluate the efficacy of the local circulation and seek to improve by surgical or mechanical means perform a careful and complete physical examination and do urine and blood tests Correct anemia hyperglycemia glycosuria malnutrition and other detectable disturbances

9 In respiratory infections summon the consultant rhinolaryngologist Particularly request a survey of the nasal accessory sinuses for detection of undrained inflammatory areas Institute local instillations or irrigations with bacitracin or tyrothricin solution

Continuing Care (Favorable Course)

1 Do not be deceived by rapid responses to therapy Maintain antibiotic levels and adjuvant measures of therapy for a period of at least ten to fourteen days after subsidence of symptoms

2 When evidences of acute inflammation have abated correct or

eliminate factors productive of local or systemic diminution in host resistance Warn the patient of possible recurrence unless general hygienic conditions are maintained at a high level

Continuing Care (Unfavorable Course)

1 In the presence of continuing or recurrent infection bacteremia metastatic pulmonary furunculosis perinephric abscess pyo arthritis osteomyelitis subacute bacterial endocarditis and otogenic or rhinogenic meningitis resort to a combined attack on the invading organism

2 Increase the dose of penicillin If intramuscular deposits are to be continued give 600 000 units of crystalline procaine penicillin G in oil with 2% aluminum monostearate every 6 8 12 or 24 hours If an intravenous drip can be established introduce 1 to 25 million units of crystalline potassium penicillin G in saline intermittently or continuously through each 24 hour period Supplement penicillin with aureomycin or chloramphenicol By the oral method approximate 100 mg per kilogram of body weight (7 gm for the average adult weighing 150 lbs) divided into four equal parts given at approximately 6 hour intervals If the intravenous drip is established inject into the rubber tubing 100 to 500 mg of aureomycin hydrochloride during the course of the continuous penicillin infusion

3 If the patient is penicillin sensitive or intolerant of aureomycin and chloramphenicol use sulfonamide for supplementation If the intravenous drip is established alternate penicillin or aureomycin hydrochloride with soluble sulfonamide using 25 gm each of sodium sulfamerazine and sodium sulfadiazine in 200 cc of diluent at 8 12 or 24 hour intervals depending on patient response Carefully examine urine and blood for evidences of sulfonamide poisoning (p 94)

4 Look for feeding loci in skin and respiratory passages When high antibiotic blood and tissue levels have been established surgically drain or excise infected areas Particularly look for evidences of suppurative sphenoiditis mastoiditis purulent arthritis suppurative osteomyelitis perinephric abscess pulmonary or pleural suppuration and suppurative endophlebitis particularly of the sinuses adjacent to mastoid and nasal accessory structures (p 1447)

5 Fortify patient resistance by intravenous introduction of plasma protein hydrolysate or blood as indicated

6 If possible isolate the particular invading staphylococcus from local lesions blood or cerebrospinal fluid Request laboratory tests for sensitivity to various available antibiotics Concentrate on introduction of what appears to be the most effective therapeutic agent

STB

STB is trivalent derivative of acetarsonic acid (4 oxy 3 acetylamino phenyl arsenoxide) is used in Africa for peroral mass therapy of frambesia (yaws) It is not currently available in the United States

The dose of STB is 10 to 20 mg per kilogram of body weight administered orally each day for five consecutive days. In the experiences of Friedheim (*Am J Trop Med* 29:185, 1949) STB produced cicatrization in all instances of infectious yaws and in fourteen of fifteen persons afflicted with crab yaws (p 4330).

STEROGL

Sterogyl is used in the treatment of leprosy in Brazil. Capsules containing 15 mg are given three times the first week, then twice a week for two or three weeks. Thereafter the dose is reduced to once a week.

Sterogyl is not currently available in the United States where the treatment of leprosy is conducted with sulfones (p 4387).

STREPTOCOCCAL INFECTIONS

Principles of Diagnosis and Therapy

1 The family of streptococci is numerous and diverse. The majority of streptococci are saprophytes which may be grown at any time from moist skin and mucous surfaces as well as from feces (p 158).

2 Streptococci vary in virulence: non-hemolytic alpha (viridans) and gamma (fecalis) organisms are infrequently pathogenic, whereas the hemolytic beta variety is most often invasive. In the presence of active inflammation resulting from one of the less pathogenic organisms, assume that there is local or systemic diminution of host resistance.

3 Paradoxically, less virulent alpha and gamma varieties of streptococcus are relatively more resistant to antibiotics (especially penicillin) than more virulent hemolytic sub-species. When invasion with alpha and gamma varieties occurs, therapy must be more intensive and prolonged, as for example in subacute bacterial endocarditis (p 4313).

4 Streptococci vary in their production of toxins. Among soluble poisons which they secrete are streptolysin which hemolyzes blood cells, leukocidin which destroys white cells, fibrinolysin which dissolves fibrin, hyaluronidase which liquefies one of the components of connective tissue, and an erythrogenic toxin which produces the characteristic rash of scarlet fever (Fig 18 = 164, Fig 20, p 177).

5 Antiserums which neutralize one variety of toxin do not necessarily neutralize others. It is for this reason that streptococcal antitoxic serums and toxin immunizations proved inadequate even in the days that preceded antibiotic therapy, and Dick testing for erythrogenic toxin is obsolete (Fig 181).

6 By contrast, anti-infective agents attack the organism which produces toxin. In this regard, they are indirectly effective as anti-

toxic agents since they destroy the toxin factory though they have no demonstrable effect on free toxin previously liberated

7 Like staphylococci streptococci possess a 'spreading factor'. This determines in part the ability of microbes to invade tissues beyond the point of inoculum. Spreading factor may be particularly operative in lymphangitis (p 3962)

8 In addition to their offensive qualities streptococci are possessed of remarkably adaptive defensive mechanisms much like staphylococci. They rapidly develop resistance to anti-infective agents especially sulfonamide and to a lesser degree penicillin (p 4133). Fortunately sulfonamide fast organisms are usually not penicillin resistant and microbes sensitive to both antibiotics yield to aureomycin and chloramphenicol.

9 The determinant in streptococcal infection is not always bacterial virulence. Just as often diminution of host resistance permits even feebly invasive organisms to produce inflammatory phenomena. Host factors which invite or permit streptococcal invasion include diminished local resistance due to breaks in the continuity of skin or mucous membrane, maceration resulting from prior infection by viruses, fungi or other bacteria and inadequacies of the local circulation. Diminished systemic resistance also may result in streptococcal invasion particularly when the host is malnourished, premature, senile, anemic, hyperglycemic, glycosuric or the victim of some wasting disease.

10 Once streptococci have gained access to the tissues they may cause a variety of clinical manifestations. They may produce a local inflammatory process such as abscess, wound infection, nasopharyngitis, tonsillitis, otitis media, puerperal or postabortal endometritis and breast abscess. The reaction may spread by continuity or contiguity giving rise to lymphangitis, lymphadenitis, accessory nasal sinusitis, mastoiditis, otogenic or rhinogenic meningitis, peritonitis, pleuritis or pneumonitis. Organisms may grow in the blood stream in a streptococcemia or they may colonize on a damaged heart valve as in subacute bacterial endocarditis (p 4313) or in the lumen of a vein as in cavernous or lateral sinus thrombosis (pp 1447 and 2130).

11 In addition to their inherent invasiveness streptococci also function as allergens. As such they may produce histamine type and tuberculin type hypersensitivity reactions. In this manner hemolytic streptococci are important factors in the pathogenesis of rheumatic fever, rheumatoid arthritis, lupus erythematosus, erythema nodosum, nephropathies and many other syndromes hitherto believed of unknown etiology (p 4169).

12 Finally when invasion, toxemia, bacteremia and hypersensitivity reactions combine clinical syndromes of the greatest complexity develop as particularly exemplified in rheumatic fever (p 4171).

13 Fortunately streptococci are sensitive to sulfonamides and many antibiotics including penicillin, bacitracin, tyrothricin, aureomycin, chloramphenicol and streptomycin. Successful management however requires more than casual introduction of the potent thera-

peutic product To prevent survival of resistant or fast bacterial strains the attack must be launched with an overwhelming loading dose High antibiotic levels must be maintained for a prolonged period of time in order successfully to deal with hardy strains of surviving organisms Host resistance must be reinforced by elimination of unfavorable factors and by strengthening defensive and offensive qualities Alternate or supplementary antibiotics must be available to eliminate fast strains which successfully evade destruction by the original therapeutic agent and additionally the clinician must deal at all times with the hazard of sensitization of host tissue to microbic antigen For this reason antibiotics must be accompanied by antihistamines for possible prevention of allergic lesions Later when proliferative and exudative hypersensitivity manifestations become apparent (as in rheumatoid arthritis and rheumatic fever) the therapeutic armamentarium requires reinforcement with cortisone or ACTH

14 The recovered patient does not develop a natural active immunity to the family of streptococci Neither can artificial active immunity be produced by available commercial preparations none of which have Council approval Included in the list of ineffective and mostly obsolete products are streptococcus bacteriophages and vaccines and scarlet fever toxins

15 Passive immunization using streptococcal antitoxin is also a feeble and now obsolete therapeutic endeavor Included in the list of abandoned preparations are erysipelas streptococcus antitoxin scarlet fever streptococcus antitoxin antierysipelas antibacterial serum human scarlet fever immune serum and rheumatic fever antiserum

16 In striking contrast to discouraging results with vaccines and serums is the efficacy of antibiotic agents For local and topical therapy we favor bacitracin and tyrothricin in solution or ointment form Both products have great potency negligible tendency for production of hypersensitivity and negligible inherent toxicity unless introduced parenterally

17 For systemic use we favor penicillin for first choice with aureomycin or chloramphenicol for supplementary or alternate prescription We oppose local use of sulfonamide for reasons elsewhere given in detail (p 4544) We oppose systemic sulfonamide therapy because of inherent toxicity of the antibiotic its marked tendency to induce bacterial fastness and most significantly because of the tendency of the antibiotic to produce histamine type and tuberculin type allergic hypersensitivity manifestations that may be identical with those caused by the microbe which the anti-infective agent seeks to eliminate

18 For treatment of special streptococcal infections see scarlet fever septic sore throat and rheumatic fever

Practical Management

Prophylaxis

1 For reasons previously stated place no reliance on injection of streptococcal antigen for production of artificial active immunity In

the rare instance where a known heavy contamination has occurred (as surgically when a finger is pricked during incision and drainage of an inflammatory lesion) resort to chemoprophylaxis. Introduce intramuscularly 300 000 to 600 000 units of crystalline procaine penicillin G in aqueous suspension. Repeat at 12 to 24 hour intervals for a period of three to five days.

Immediate Care

1 Except in the management of relatively mild and isolated local lesions do not place main reliance on local or topical therapy. There is no objection to wet dressings or ointments of bacitracin or tyrothricin but we oppose introduction of antibiotics directly into the inflammatory area. If antibiotic is introduced parenterally it is best given in an indifferent site using a dose sufficiently large to provide for adequate antibiotic levels in infected as well as other tissues.

2 With the exception above noted favor parenteral injection of a massive loading dose of penicillin. Depending on the severity and extent of the lesion and the state of host resistance introduce an intramuscular priming dose of 300 000 to 1 200 000 units of crystalline procaine penicillin G in aqueous or oil suspension the latter with or without 2% aluminum monostearate. Maintain blood and tissue levels with subsequent injections of amounts equal to the priming dose at 8 12 or 24 hour intervals as indicated by the clinical response.

3 To the penicillin sensitive give aureomycin or chloramphenicol. Prescribe a heavy loading dose approximating 100 mg per kilogram of body weight (7 gm for average adult weighing 150 lbs). Give 2 products every few minutes with fruit juice ice cream milk carbonated water tea or broth until the entire quantity has been ingested.

4 If the stomach is intolerant of aureomycin substitute chloramphenicol or terramycin.

5 If neither antibiotic is tolerated orally improvise a solution by dissolving double the oral dose in warm saline. Introduce rectally by means of a funnel attached to an inserted male catheter. Hold buttocks firmly together for at least fifteen minutes to prevent expulsion particularly with children.

6 If aureomycin and chloramphenicol are not tolerated orally or rectally consider intravenous injection of 100 to 500 mg of aureomycin hydrochloride for intravenous use. Dissolve in 0.75% sodium carbonate solution as provided by manufacturer.

7 Concurrently with antibiotic given prophylactic antihistamine therapy. Use daily doses of 200 to 400 mg of pyribenzamine or benadryl. Continue for at least two weeks after last dose of antibiotic.

8 With localized lesions look for neighboring sites of lessened resistance. Seek areas of dermatophytosis and treat concurrently with fungicides (p 4331). Evaluate efficacy of local circulation and seek to improve by surgical or mechanical means. Perform a careful and complete physical examination and do urine and blood tests. Correct anemia hyperglycemia glycosuria malnutrition and other detectable disturbances.

9 In respiratory infections summon consultant rhino-laryngologist. Particularly request a survey of nasal accessory sinuses for detection of undrained inflammatory areas. Institute local instillations or irrigations with bacitracin or tyrothricin solutions.

Continuing Care (Favorable Course)

1 Do not be deceived by rapid responses to therapy. Maintain antibiotic levels and adjuvant measures of therapy for a minimum period of ten to fourteen days after subsidence of symptoms.

2 When evidences of acute inflammation have abated, correct or eliminate factors productive of local or systemic diminution of host resistance. Warn patient of possible recurrence unless general hygienic conditions are maintained at a high level.

Continuing Care (Unfavorable Course)

1 In the presence of continuing or recurring infection, bacteremia, metastatic pulmonary lesions, perinephric abscess, pyoarthritides, osteomyelitis, subacute bacterial endocarditis, and otogenic or rhinogenic meningitis, resort to a combined attack on the invading organism.

2 Increase the dose of penicillin. If intramuscular deposits are continued, give 600,000 units of crystalline procaine penicillin G in oil with 2% aluminum monostearate every 6, 8, 12, or 24 hours. If an intravenous drip can be established, introduce 1 to 25 million units of crystalline potassium penicillin G in saline intermittently or continually throughout each 24-hour period. Supplement penicillin with aureomycin or chloramphenicol. By the oral method, approximate 100 mg per kilogram of body weight (7 gm for the average adult weighing 150 lbs.). Divide into 4 equal parts given at approximately 6-hour intervals. If the intravenous drip is established, inject into the rubber tubing 100 to 500 mg of aureomycin hydrochloride during the course of the continuous penicillin infusion.

3 If the patient is penicillin sensitive or intolerant of aureomycin and chloramphenicol, consider use of sulfonamide for supplementation. If an intravenous drip has been established, alternate penicillin or aureomycin hydrochloride with soluble sulfonamide, using 2.5 gm each of sodium sulfamerazine and sodium sulfadiazine in 200 cc of diluent at 8, 12, or 24-hour intervals, depending on patient response. Carefully examine urine and blood for evidences of sulfonamide poisoning (p. 94). Look for manifestations of allergic hypersensitivity.

4 When a high antibiotic blood and tissue level has been established, surgically drain or excise infected areas. Particularly look for evidences of suppurative sphenoiditis, mastoiditis, purulent arthritis, suppurative osteomyelitis, perinephric abscess, pulmonary or pleural suppuration, and suppurative endophlebitis of sinuses adjacent to mastoid and nasal accessory structures (p. 1447).

5 Fortify patient resistance by intravenous introduction of plasma protein hydrolysate or blood as indicated.

6 If possible, isolate invading streptococcus from local lesions.

blood or cerebrospinal fluid. Request laboratory tests for sensitivity to various available antibiotics. Introduce most effective therapeutic agent.

7 With superimposed allergic hypersensitivity manifestations (including endocarditis, myocarditis, glomerulonephritis, lupus erythematosus, erythema nodosum, periarthritis nodosa, poly-arthritis, serous effusions in joints, pleura, pericardium or peritoneal cavity) follow suggestions for Phase III of rheumatic fever complex (p 4500).

8 In convalescence revert to suggestions for prophylaxis of rheumatic fever (p 4497).

STREPTOCOCCAL SORE THROAT

[Septic Sore Throat]

Principles of Diagnosis and Therapy

1 Septic sore throat is a hemolytic streptococcal invasion (p 185) usually epidemic and milk borne through bacterial contamination secondary to bovine mastitis.

2 While manifestations of septic sore throat are usually due to organism invasion they may also include hypersensitivity phenomena simulating those observed in rheumatic and scarlet fevers (pp 135 and 171 Fig 20 p 177 and Fig 18 p 164).

Practical Management

Prophylaxis

- 1 Notify Health officers to survey milk routes. Discontinue milk deliveries.
- 2 Substitute powdered or canned milk for fresh product.
- 3 Isolate patient as assiduously as those with scarlet fever (p 67).

Immediate Care

- 1 Institute nonspecific treatment of the infected patient (pp 68-73).
- 2 Inject intramuscularly a loading dose of 600 000 units of procaine penicillin G in aqueous suspension (p 4452).
- 3 Order 200 mg daily of pyribenzamine or benadryl orally. If patient cannot swallow introduce 5 cc of 1% benadryl intramuscularly.
- 4 Avoid sulfonamides which are less effective than penicillin (p 186) and impose the hazard of drug hypersensitivity (p 4179).

Continuing Care (Favorable Course)

- 1 Maintain penicillin levels with daily injections of 300 000 to 600 000 units procaine penicillin G for at least three days after defervescence.
- 2 Continue antihistamine for two weeks beyond discontinuance of antibiotic.
- 3 Check urine and heart weekly for at least six weeks.

Continuing Care (Unfavorable Course)

1 With persistent symptoms double penicillin unitage

2 If the patient is sensitive to penicillin or the organism appears resistant substitute aureomycin or chloramphenicol rather than sulfonamide. Give a priming dose of 100 mg per kilogram (7 gm or 28 products for the average adult weighing 150 pounds). Give 2 products every few minutes with milk, cheese or ice cream until the entire amount is swallowed. Sustain antibiotic levels with daily maintenance doses equal to the priming dose given in four equal portions at six hour intervals.

3 Only in desperation resort to sulfonamides. Give 1 to 2 gm each of sulfadiazine and sulfamerazine with bicarbonate of soda for the loading dose. If the stomach is intolerant inject intravenously 2.5 gm each of sodium sulfadiazine and sodium sulfamerazine in 200 cc of diluent preferably molar lactate.

STREPTOMYCIN**Available Products**

Streptomycin (base) NNR Ampuls and vial containing 1 gm (Abbott, Cutter, Heyden, Lilly, Merck, Merrell, Parke, Davis, Pfizer, Raymer, Schenley, Sharpe & Dohme, Squibb, Upjohn, Warner, Wyeth) containing 5 gm (Merck, Squibb) containing 10 gm (Upjohn).

Ointment (1 gm = 5000 micrograms) Bristol. Requires refrigeration.
Dihydrostreptomycin Vials 1 and 5 gm (Abbott, Merck, Parke, Davis, Squibb, Upjohn, Winthrop).

Neomycin—not commercially available.

Dosage, Therapeutics and Toxicity

See under tuberculosis pp 4608 to 4619.

STRONGYLOIDIASIS

[Threadworm Infestation, Cochun China Diarrhea]

Principles of Diagnosis and Therapy

1 Strongyloidiasis usually complicates uncinariasis (p 4624).

2 The diagnosis is established through identification of rhabditiform larvae in the stool (Fig 438 p 1904 lower right hand corner).

Practical Management

1 Treat uncinariasis first (p 4624). This may also eliminate strongyloides.

2 If strongyloidiasis persists after eradication of hookworm, use gentian violet as the anthelmintic of choice (p 4197).

3 Order the patient to swallow one hour before meals two 1½ hour Seal in tablets of gentian violet (each containing 32 mg) thrice daily for two days. On the third and fourth days increase each dose to 3 tablets on the fifth and sixth days to 4 tablets and from the seventh to the twelfth days to 5 tablets or a daily total of 15 tablets (480 mg)

4 If intensive gentian violet therapy produces nausea vomiting or diarrhea omit the next dose and go back to the smaller amount, continuing maximum tolerated dose until the twelfth or preferably the eighteenth day if possible

5 In severe infections and in patients with gastric intolerance to gentian violet pass a duodenal tube daily for one week. Each time give a transduodenal feeding of 25 cc of 1% aqueous gentian violet

SULAMYD [SULFACETIMIDE SODIUM]

An unofficial soluble sulfonamide (p 4546) widely used by ophthalmologists gynecologists and urologists

Available Products

Sulamyd Tablets 0.5 gm (Schering)

Sulamyd Solution (30%) (Schering)

Therapeutics

In urinary infections rapid excretions produce high levels. Daily doses of 3 to 4 gm are usually employed

For ophthalmic use the 30% solution effects a concentration of 800 mg per cent in the cornea after instillation of one or two drops. Sulamyd instillation is suggested after removal of foreign bodies after trauma as a pre-operative and postoperative prophylactic measure and in treatment of conjunctivitis caused by *Staphylococcus aureus* Koch Weeks bacillus pneumococci E coli E typhosa and gonococci

Quite likely Sulamyd will yield to aureomycin which covers a broader bacterial spectrum and is free from toxicity

Toxicity

As other sulfonamides (p 94)

SULFONAMIDES

Practitioners of the 1930 vintage will find it difficult to believe that sulfonamides miracle drugs of dawn years in the Golden Age of Therapeutics already are becoming obsolete and that their utter and complete abandonment would detract only slightly from over all efficacy of anti-infective therapy. Penicillin is capable of taking com

plete care of sulfonamide sensitive coccal invasions with the possible exception of meningococemia and aureomycin and chloramphenicol are vastly superior to sulfonamide in gram negative bacillary invasions and viremias

Aside from the extraordinary therapeutic potentials of its relatively nontoxic rivals principal causes for diminishing use of sulfonamide are its inherent toxicity (p 94 Fig 15 p 90) its tendency to produce allergic hypersensitivities and the facility with which bacteria develop resistant or fast strains These limiting Anti therapeutic Devices (p 4133) require consideration before review of positive contributions to sulfonamide therapy

TOXICITY

The inherent toxicity of the sulfonamides includes untoward reactions due to unforeseen idiosyncrasy and those resulting from frank overdosage In either instance sulfonamide poisoning may produce neurological disturbances drug fever toxicoderms blood dyscrasias toxic hepatitis crystalluria and urolithiasis (pp 94-96)

Efforts to Reduce Toxicity Several praiseworthy attempts have been made to reduce the toxicity of sulfonamides These include

- 1 Elimination of demonstrably toxic products such as sulfanilamide sulfapyridine sulfathiazole etc
- 2 Alkalinization of urine by administration of 2 gm of bicarbonate of soda with each gram of sulfonamide
- 3 Simultaneous administration of sulfonamide with sodium lactate The latter by increasing urinary pH favors solubility of free and conjugated forms of antibiotic
- 4 Implementation of Lehrs demonstration that several sulfonamides such as sulfathiazole sulfadiazine sulfamerazine and sulfapyrazine can be dissolved simultaneously in the same medium to the full extent of their separate saturation levels without the occurrence of precipitation Consequently combinations of partial dosages of two or more sulfonamides if compared with equal total amounts of single drugs showed substantially less tendency to intratubular deposition of crystals and thus to the development of renal obstruction This fact explains the strikingly low acute and chronic toxicity of sulfonamide combinations At identical total concentrations the *in vitro* antibacterial efficacy of the sulfonamide combinations is equal and sometimes superior to the activity of the single compounds

The use of combinations of partial dosages is best illustrated by Council approved trisulfazine (Central) containing 0.166 gm each of sulfadiazine sulfamerazine and sulfamethazine with sodium lactate This single product accomplishes full therapeutic potency with negligible danger of crystalluria and urolithiasis The incidence of crystalluria with the combined product is reduced to 6 per cent as against 29 per cent with sulfadiazine alone 28 per cent with sulfamerazine alone and 70 per cent with sulfathiazole alone Renal complications are reduced to zero with the combination as against 25 per cent with sulfadiazine 4 per cent with sulfamerazine and 55 per cent with sulfathiazole Toxicoderms and drug fevers occur in 2 per cent with

the mixture as against 3 per cent with sulfadiazine 5 per cent with sulfamerazine and 11 per cent with sulfathiazole

Comparison with Toxicity of Other Antibiotics Despite significant reduction in sulfonamide toxicity untoward manifestations remain disproportionately high when compared to the almost complete innocuousness of penicillin aureomycin and chloramphenicol

ALLERGIC HYPERSENSITIVITY

A second black mark against sulfonamide therapy is the relatively high incidence of hypersensitivity reactions These include immediate acute histamine type syndromes and less frequently encountered appalling and insidious chronic tuberculin type manifestations (p 4169) Under latter circumstances as detailed completely in the section on

Allergic Hypersensitivity the therapist may contribute to or actually initiate a crippling if not lethal reaction simulating peri arteritis nodosa rheumatoid arthritis rheumatic fever abacterial endocarditis or diffuse lupus erythematosus

Additional observations which add to the menace of sulfonamide hypersensitivity reactions include the following observations

1 Hypersensitivity manifestations result from local or topical applications of small total quantities as well as oral or parenteral administration of full therapeutic doses

2 There is an increasing incidence of hypersensitivity with repeated exposures to drug antigen Thus occurrence of sulfonamide sensitivity is less than 8 per cent on first exposure but second administration increases the rate to 11 per cent

3 The period of incubation between administration of sulfonamide allergen and appearance of tuberculin type hypersensitivity may be weeks months or years The conscientious practitioner who lives his life with his patients may never feel completely at ease with those for whom he has prescribed sulfonamides Should one or more of the long roster of tuberculin type manifestations later develop (p 4169) from whatever cause he may not satisfactorily exonerate himself in his own eyes

4 Coexistence of symptoms of microbic invasion and those of bacterial and drug hypersensitivity create confusing problems for the therapist This is best illustrated in rheumatic fever (p 4171) in Phase I sulfonamide administration is demonstrably useful in preventing and combating streptococcal invasion in later phases during which rheumatic manifestations appear to result from sensitization to bacterial antigen administration of sulfonamide may intensify symptomatology presumably from allergic responses of host tissues to drug proteinate antigen

Comparison with Other Antibiotics The threat of sulfonamide hypersensitivity reactions looms most formidably when comparison is made with other antibiotics particularly penicillin aureomycin and chloramphenicol Each of the latter three to be sure is capable of producing acute histamine type hypersensitivity reactions most of which have mere nuisance value (urticaria and other toxicoderms drug

fever and eosinophilia) but there have not yet been reported experimental or clinical evidences that any of these potent anti-infective agents is capable of inducing more serious chronic tubercular type syndromes

DEVELOPMENT OF BACTERIAL RESISTANCE OR 'FASTNESS'

A third serious deterrent to sulfonamide therapy is the tendency of certain bacteria to develop an active immunity to the antibiotic agent. Early in clinical experiences with sulfonamide therapy of gonorrhea it was noted that certain organisms became resistant to the therapeutic agent. Stated in another way certain strains of gonococci developed resistance or drug fastness to the extent that treatment became quite ineffectual (p 4133)

Comparison with Other Antibiotics The development of drug fast strains of bacteria is not unique with gonococci and sulfonamide. The principle is illustrated also by tubercle bacilli when exposed to streptomycin (p 4610). However microbial immunity occurs rarely with penicillin, aureomycin and chloramphenicol. Further gonococci that exhibit bacterial resistance to sulfonamide are as sensitive to penicillin as other strains of *Neisseria*.

SUMMARY

The counts against sulfonamides (particularly as compared to other antibiotics such as penicillin, aureomycin and chloramphenicol) include the threats of idiosyncrasy, toxicity, hypersensitivity and development of bacterial resistance. The status of sulfonamide therapy has been best summarized by Talbot (New York State J. Med. 19-8 p 283) in the following words:

Sulfonamide should not be prescribed unless there is adequate clinical evidence to warrant therapeutic use. Optimal amounts only should be given and excesses avoided. The drug should be discontinued as soon as possible. Finally sulfonamide should not be given if other methods of therapy are available which are equally efficacious. It is apparent that the incidence of severe and untoward reactions from sulfonamides cause them to be considered potentially more harmful than penicillin. With standardization of the doses of penicillin there has been no evidence forthcoming which shows that an excess of penicillin does any particular harm. Sulfonamides on the other hand become increasingly toxic as the quantity increases.

Preparations for Local and Topical Use

In the early years following its introduction into clinical medicine when sulfonamides were relatively unopposed as effectual anti-infective agents the market was deluged with products intended for local and topical application. Traumatic and surgical wounds, both civil and military, were quite regularly dusted with sterilized sulfonamide powder or crystals. Pharmaceutical manufacturers hastened to put forth a wide variety of products to include crystals, micro-crystals, dermal and

ophthalmic ointments nose drops shaving soaps after shave lotions hair tonics suppositories solutions troches lozenges dental cones packings and the like

In the text devoted to the pharmacology and therapeutics of the sulfonamides the Integrated Practice of Medicine (p 99) clearly expressed disapproval of indiscriminate use of sulfonamide preparations for local bacteriostasis or bactericidal activity. The topical use of the sulfonamides has been enthusiastically exploited without due consideration of limitations and dangers. The hopes and expectations of local bacteriostasis are not justified by theoretical or practical consideration. The sulfonamides are not directly lethal to bacteria as is iodine. They require tissue participation for their bacteriostatic and bacteriolytic proclivities and their therapeutic activity is lessened and almost nullified by the presence of pus, blood, dead bacteria and procaine an ester of para aminobenzoic acid.

In addition to distinctly limited local parasitropism, topical applications of sulfonamide possess demonstrable and theoretical hazards for the host. They may cause the same toxicity as systemic doses; they delay healing and they may produce sensitivity so that systemic employment at a future time may be precluded.

The Council on Pharmacy and Chemistry, 1947, added its official condemnation of sulfonamide products for local application. Acceptance of preparations previously authorized was rescinded in keeping with the statement that "Experience gained in World War II seems to indicate that the use of crystalline sulfonamides as topical agents was not very successful in the management of wound infection or in the treatment of infections of the skin or mucous membrane. The routine use of sulfonamides as topical applications in wounds, burns and in superficial infections is therefore to be discouraged." The Council believes it necessary to emphasize again the potential hazards of the indiscriminate topical use of sulfonamide preparations. Inquiries are being received concerning the local use of sulfonamides in conditions for which there is no evidence of their value, such as hair tonics to control dandruff and promote growth of new hair in shave cream to prevent infection and in other equally inconsequential preparations. Not only are the sulfonamides ineffective in such preparations but their use in any concentration represents a real danger to the user for three reasons: (1) the substitution of an ineffective remedy for one which might be of value; (2) the possibility now widely recognized of permitting the development of sulfonamide resistant organisms; and (3) the development of cutaneous sensitization thus preventing the use of sulfonamides in serious conditions for which these drugs are known to be effective.

These arguments may be supplemented by two additional statements: (4) locally deposited sulfonamides retard healing and favor the formation of adhesions, particularly in the peritoneal cavity; and (5) where therapeutic results have seemingly been obtained (particularly following introduction of amounts as great as 5 gm. into the peritoneal cavity after laparotomy) the efficacy of the antibiotic agent undoubtedly

resulted from postabsorptive action such as might have been more readily produced if the preparation were given orally or intravenously.

Comparison with Other Topical Antibiotics As in the instance of the sulfonamides pharmaceutical manufacturers have attempted to broaden their listings of antibiotic preparations for local and topical application. In the particular instance of penicillin dermal and ophthalmic ointments, troches, lozenges, dental cones, dusts for inhalation, aerosols, suppositories, washes, wet dressings, and the like are marketed (p. 4452). Similarly ointments and ophthalmic solutions of aureomycin are available, as well as an ointment of streptomycin.

Whereas many objections to the topical applications of sulfonamides do not apply to more recently introduced antibiotics, there still remain deterrents to their popular use. Exemplifying these principles, penicillin is bactericidal when applied locally or topically but it does possess a capacity for sensitization greater than when given parenterally. As many as 5 to 15 per cent of those to whom penicillin is locally applied develop contactual irritation due to sensitization. This fact alone, in our opinion, suffices to eliminate for local and topical use those potent anti-infective agents for which there may be later systemic indication in the treatment of more threatening bacterial invasion. It is recommended, therefore, that those who think well of local and topical antibiotic therapy consider only those anti-infective agents which are not useful systemically, notably bacitracin (p. 4247) and tyrothricin (p. 4622). Perhaps the single justifiable exception to this tenet is the recommended use of aureomycin in ophthalmic solution (1 cc. = 25 mg.) because of its unparalleled efficacy in combating microbial invasions of the superficial tissues of the eye.

Available Preparations for Systemic Use

There is available a bewildering variety of sulfonamide preparations for systemic use. These include soluble and insoluble products and the sulfones, separately considered in another place (p. 4552).

Once again the practitioner is indebted to the Council on Pharmacy and Chemistry of the American Medical Association for elimination of many objectionable products.

Soluble Sulfonamides Approved Council accepted soluble sulfonamides are sulfadiazine, sulfamerazine, and sulfapyrazine. Elimination of the remaining soluble preparations (including sulfanilamide, sulfapyridine, sulfathiazole, etc.) is the result of their relatively increased toxicity as detailed previously in Table 11 (p. 97).

THE SOLUBLE SULFONAMIDES

| Product | Comment |
|-------------------|---|
| Gantisin (NU 445) | Newly introduced intestinal and urinary antiseptic (p. 4625). See p. 4340. |
| Nisulfazole | A 10% suspension of parantrosulfathiazole. Used as retention enema in treatment of colitis. Subject to same criticisms as other sulfonamides applied locally. See text. |

THE SOLUBLE SULFONAMIDES (Continued)

Product

Comment

6257

A sulfonamide containing two molecules of sulfathiazole and three molecules of formaldehyde. Not commercially available. Under investigation for use in cholera (p. 4284).

Sulamyd (Sulfacetimide)
Tablets 0.5 gm (Schering)

Unofficial soluble sulfonamide favored by many urologists and gynecologists for urinary tract infections (p. 4540).

Sulfadiazine USP
Tablets 0.5 gm (Abbott American, Buntington Cole Flint, Eaton, Harrower, Lederle, Lilly, McNeil, Merrell, Miller, Parke Davis, Rorer, Sharp & Dohme, Smith, Squibb, Upjohn, Vale, Wyeth)

Well absorbed from gastro-intestinal tract, acetylated form very soluble, well excreted by kidneys, capable of effectual concentrations in blood and spinal fluid, over all high therapeutic efficacy with relatively low toxicity.

Sodium Sulfadiazine USP
5 gm vials of the sterile powder (Sharp & Dohme, Squibb)
Ampuls 10 cc of 25% (Lilly)
Ampuls 80 cc of 5% (Sharp & Dohme)

For intravenous use for priming or loading dose do not exceed 100 mg per kilogram of body weight (approximately 40 to 45 mg per lb) up to a total dose of 5 gm, preferably inject in 5% solution made up to volume with sterile distilled water.

Sulfamerazine USP (Sulfamethyldiazine)
Tablets 0.5 gm (Abbott American, Lederle, Lilly, Parke Davis, Sharp & Dohme, Squibb, Upjohn)

Enjoys all therapeutic advantages of sulfadiazine but additionally maintains blood levels longer so that doses may be given at less frequent intervals.

Sodium Sulfamerazine USP
Vials of 5 gm (Sharp & Dohme)
Ampuls 10 cc of 25% (Lederle)
Ampuls of 80 cc of 5% (Sharp & Dohme)

Obtain effective therapeutic levels by use of only 30 mg per kilo (approximately 20 to 25 mg per lb) as compared with double dose of sodium sulfadiazine make up in 5% solution with sterile distilled water or sterile isotonic saline for intravenous use.

Sulfanilamide (Prontylin) USP

Because of lesser toxicity prefer sulfadiazine, sulfamerazine or sulfapyrazine. No longer on approved list.

Sulfapyrazine NNR
Tablets 0.5 gm (Mead Johnson)

Comparable to sulfadiazine and sulfamerazine but less well established through later introduction and narrower experience.

Sodium Sulfapyrazine
Powder 5 gm (Mead Johnson)

Use as sodium sulfamerazine.

Sulfapyridine

Because of lesser toxicity prefer sulfadiazine, sulfamerazine or sulfapyrazine. No longer on approved list.

Sulfathiazole

Because of lesser toxicity prefer sulfadiazine, sulfamerazine or sulfapyrazine. No longer on approved list.

Trisulfazine
Tablets 0.5 gm NNR (Central)

Ingenious product combining 1.66 gm each of sulfadiazine, sulfamerazine and sulfamethazine with sodium lactate. Combination of partial doses of three soluble sulfonamides accomplishes cumulative antibiotic action with reduced incidence of crystalluria and urolithiasis (p. 4541). Addition of sodium lactate tends to favor solution of urinary crystals.

Dosage Schedules Dosage schedules for soluble sulfonamides are more or less arbitrary. The amount of priming and maintenance quantities depends for the most part on the severity of the infection and the relative size and age of the patient. Determinations of blood and urine levels have almost completely gone out of vogue. Practitioners now as always rely on clinical acumen to gauge therapeutic indications. In general, the rule of thumb is administration of sufficient antibiotic to lessen or completely ameliorate manifestations of microbic invasion without production of toxic manifestations.

Using the sodium salt intravenously, blood concentrations are quite clearly approximated through use of the following table.

CALCULATION OF SULFONAMIDE BLOOD CONCENTRATIONS THROUGH INTRAVENOUS DOSAGES

| Weight of Patient in Pounds | Weight of Patient in Kilos | Cubic Centimeters of 5% Solution of Sodium Salt to Raise Blood Level 1 mg % | Dose of Sodium Salt in Grams |
|-----------------------------|----------------------------|---|------------------------------|
| 11 | 5 | 1 | 0.05 |
| 22 | 10 | 2 | 0.1 |
| 33 | 15 | 3 | 0.15 |
| 44 | 20 | 4 | 0.2 |
| 55 | 25 | 5 | 0.25 |
| 66 | 30 | 6 | 0.3 |
| 77 | 35 | 7 | 0.35 |
| 88 | 40 | 8 | 0.4 |
| 110 | 50 | 10 | 0.5 |
| 132 | 60 | 12 | 0.6 |
| 154 | 70 | 14 | 0.7 |

Oral doses for the adult depend mostly on the severity of the infection. In general, the loading dose should be no less than 2 gm and no more than 8 gm, preferably using tablets containing combined triple soluble salts with sodium lactate (trisulfazine). Maintenance doses depending on patient response and evidences of toxicity or sensitization, average 0.5 to 1 gm every four hours day and night, preferably given with alkaline fluids.

For infants and children, initial dose of soluble sulfonamide approximates 1 gm for each 20 pounds of body weight. Maintenance doses approximate one quarter the loading dose, given every four to six hours depending on clinical response.

Antihistamines We favor simultaneous administration of antihistamine for prophylactic use against allergic hypersensitivities due to sulfonamide. Antihistamines (p 4212) have no significant inherent toxicity, though they may somewhat contribute to the drowsiness and ataxia resulting from antibiotic prevention of nuisance symptoms of acute histamine type hypersensitivity (p 4167) is of minor importance, but mitigation of manifestations of tuberculin type hypersensitivity (p 4169) even in small part warrants the increased trouble and expense of concurrent prescription. The practitioner may initiate therapy with daily doses of 200 mg of either of the original Council approved products, pyribenzamine or benadryl (p 4214).

Insoluble Sulfonamides The Council on Pharmacy and Chemistry of the American Medical Association (1949) as in other instances has simplified the practitioner's problem by its decision to discontinue sulfaguanidine from the list of approved insoluble sulfonamides. However the two remaining approved products phthalylsulfathiazole and succinyl sulfathiazole have been challenged through introduction of thalamyd (phthalylsulfacetamide)

INSOLUBLE SULFONAMIDES

| Preparation and Manufacturer | Comment |
|---|--|
| Phthalylsulfathiazole (Sulfathiazole) N.R. Tablets 0.5 gm (Sharp & Dohme) | (See Table 12 p 101) Official insoluble sulfonamide average daily adult dose 4 to 8 gm given in four divided portions. Average loading dose preliminary to intestinal surgery 6 to 8 gm followed by similar amount for total daily dose in four divided portions for three to five days prior to operation and at least an equal amount of time postoperatively. |
| Succinylsulfathiazole (Sulfasuxidine) Tablets 0.5 gm (Sharp & Dohme) Cremosuxidine 30 cc = 3 gm | Official insoluble sulfonamide less favored than phthalylsulfathiazole (Table 12 p 191) since larger dosages are required for equivalent effect (250 mg per kg) |
| Sulfaguanidine | No longer Council accepted |
| Thalamyd (Schering) | Newly introduced product midway between soluble and insoluble products (p 4563) |

BACTERIAL SPECTRUM OF SULFONAMIDES

Staphylococcus

Organism sulfonamide sensitive but may develop resistance prefer penicillin supplemented, if necessary with aureomycin or chloramphenicol reserve streptomycin for third choice use sulfonamide only in the greatest need

Streptococcus

Most strains sulfonamide sensitive however anaerobes are resistant and other varieties may develop fastness. Habit of streptococcus to produce tuberculin type hypersensitivity (as in rheumatic fever) sharply limits use of sulfonamide which may produce similar pathological disturbances as the result of drug hypersensitivity prefer penicillin with supplementation by aureomycin and chloramphenicol reserve streptomycin for third choice use sulfonamide only in desperation

Pneumococcus

Organism sulfonamide sensitive but prefer penicillin on grounds of lesser toxicity if supplementation is required choose aureomycin or chloramphenicol with sulfonamide as third choice

Meningococcus

Organism sulfonamide sensitive many clinicians regard sulfonamide as first choice in view of gravity of infection use combined sulfonamide penicillin attack, reserving aureomycin and chloramphenicol for third choices

Gonococcus

Organism sulfonamide sensitive but often develops bacterial resistance prefer penicillin on rare occasion when supplementary therapy is needed choose aureomycin chloramphenicol or streptomycin

BACTERIAL SPECTRUM OF SULFONAMIDES (*Continued*)

Typhoid Bacillus

■ typhosa somewhat sulfonamide sensitive not comparable to chloramphenicol which is preparation of choice

Salmonellae (Paratyphoid)

Salmonellae somewhat sulfonamide sensitive but not comparable to chloramphenicol which is preparation of choice

Shigellae

(Bacillary Dysentery)

Shigellae somewhat sulfonamide sensitive but not comparable to chloramphenicol and aureomycin which are preparations of choice

Colon Bacillus

Organism somewhat sulfonamide sensitive but not comparable to aureomycin and chloramphenicol which are preparations of choice with streptomycin for supplementation

Cholera

V comma somewhat sulfonamide sensitive excellent results reported continue use of soluble sulfonamide or of thiamyd until status of aureomycin and chloramphenicol is more clearly defined

Tuberculosis

M tuberculosis somewhat sulfonamide sensitive but not comparable to streptomycins which are preparations of choice

Leprosy

Organism somewhat sulfonamide sensitive but not comparable to sulfones which are preparations of choice

B anthracis

Organism somewhat sulfonamide sensitive prefer penicillin and use sulfonamide as desperation supplementation

B influenzae

Organism somewhat sulfonamide sensitive particularly in conjunction with streptomycin, however not comparable to aureomycin and chloramphenicol which are preparations of choice

Chancroid

H Ducrey ■ sulfonamide sensitive but not comparable to aureomycin and chloramphenicol which are preparations of choice

Brucellae

Br melitensis somewhat sulfonamide sensitive particularly in conjunction with streptomycin not comparable to aureomycin and chloramphenicol which are preparations of choice

Plague

P pestis somewhat sulfonamide sensitive excellent results reported, continue use until status of aureomycin and chloramphenicol can be more clearly defined

Glanders

M mallei ■ generally resistant sulfonamide therapy may be tried as a desperation remedy

Trachoma

Virus somewhat sulfonamide sensitive but not comparable with aureomycin and chloramphenicol which are preparations of choice

BACTERIAL SPECTRUM OF SULFONAMIDES (Continued)

Follicular Conjunctivitis

Virus somewhat sulfonamide sensitive but not comparable with aureomycin and chloramphenicol which are preparations of choice

Lymphogranuloma Venereum

Virus somewhat sulfonamide sensitive but not comparable with aureomycin and chloramphenicol which are preparations of choice

Molluscum Contagiosum

Virus somewhat sulfonamide sensitive but not comparable with aureomycin and chloramphenicol, which are preparations of choice

Actinomycosis

Fungus somewhat sulfonamide sensitive continue to use with penicillin as desperation remedy

Rheumatic Fever

If hypersensitivity theory of pathogenesis is accepted substitute penicillin for prophylaxis and treatment of Phase 1 avoid sulfonamide because of hyperallergenicity

Rheumatoid Arthritis

If hypersensitivity hypothesis is accepted (p 4169) consider sulfonamides contraindicated

Urinary Infections

Most gram negative bacilli sulfonamide sensitive prefer aureomycin or chloramphenicol reserving streptomycin for supplementation if necessary

Antibiotic Synergism

Concurrent empiric use of two or more antibiotics often is dictated by necessity as in Probatory and Desperation Anti infective Therapy (p 4219) However there are times when combinations are scientifically employed on the basis of demonstrable synergism

Sulfonamide Penicillin Definitively greater bacteriostatic effects are noted when sulfadiazine and penicillin are used in combination against certain strains of streptococci and staphylococci The synergistic action of penicillin and sulfonamide is due to the fact that penicillin acts predominantly at the time of cell division whereas sulfadiazine reduces the rate of multiplication of organisms

Sulfonamide Streptomycin Sulfonamide streptomycin synergism also has been demonstrated clinically in the treatment of brucellosis tularemia and H influenzae meningitis Particularly in acute brucellosis neither streptomycin nor sulfonamide alone appeared to accomplish much therapeutically It was not until combined therapy was inaugurated that undeniably specific results were obtained Unfortunately this therapeutic triumph enjoyed a relatively brief period of popularity since it was no sooner demonstrated than the even more sensational results of aureomycin and chloramphenicol therapy relegated synergistic treatment by sulfonamide and streptomycin to the growing list of worthy but obsolescent achievements

Desperation Antibiotic Therapy Those purists who frown on combined antibiotic therapy may be reminded of these demonstrable

synergisms when the realistic practitioner faced with problems of overwhelming infections inadequate responses remissions relapses exacerbations and complications prepares to throw the book in his efforts to salvage the hard pressed patient

Sulfonamide Antagonisms

It is generally accepted that the major effect of sulfonamides is prevention of synthesis by bacteria of pteroyl compounds which in turn are derivatives of para aminobenzoic acid and hence related to folic acid. Pteroyl compounds are required as growth factors by many species. To be efficacious sulfonamide therapy must be administered in doses sufficient to prevent utilization of available para aminobenzoic acid. In turn para aminobenzoic acid is capable of antisulfonamide action.

The practical significance of sulfonamide para aminobenzoic acid antagonism has been emphasized by the growing popularity of procaine penicillin salts. Inasmuch as para aminobenzoic acid is a degradation product of procaine, procaine penicillin may alter sulfonamide activity and vice versa. Fortunately preliminary reports suggest that the interference is negligible (JAMA 140:1068, 1949).

Therapeutics

As previously detailed, it is only in the rare instance that sulfonamide remains the prime preparation of choice in the prophylaxis or active treatment of microbic invasions. For the most part it has assumed secondary or even tertiary importance when less toxic remedies fail or when the gravity of the invasion requires combined treatment as a desperate measure.

Prophylaxis

Staphylococcal Infection prefer penicillin

Streptococcal Infection prefer penicillin. Consider sulfonamides contraindicated if hypersensitivity phenomena are feared as in rheumatic fever.

Meningococcal Infection consider use for mass prophylaxis in epidemics.

Gonorrhea unsatisfactory since resistant strains may develop prefer penicillin which is equally active against sulfonamide sensitive and sulfonamide resistant strains.

Colon Bacillus Infections used by urologists as sulamyd to prevent bladder infections consequent to instrumentation. Prefer aureomycin, chloramphenicol or streptomycin.

Cholera Use soluble preparations for mass prophylaxis in epidemics.

Chancroid effectual prophylaxis particularly in army encampments. Single doses of 2 gm. on leaving and returning to barracks protect against gonorrhea and chancroid.

Shigellosis (Bacillary Dysentery) use soluble sulfonamide for mass prophylaxis during epidemic.

Surgery use insoluble sulfonamides preparatory to gastric intestinal or urinary tract procedures

Specific Anti Infective Therapy

Staphylococemia in conjunction with penicillin and aureomycin or chloramphenicol

Meningococemia many regard soluble sulfonamide as first choice with supplementation by penicillin

Cholera regard as first choice until status of aureomycin and chloramphenicol is established

Glanders try as desperation remedy

Actinomycosis try as desperation remedy

Torulosis try as desperation remedy

SULFONES

The sulfones have as their parent radical diamino-diphenyl sulfone. In the body it is most likely that each breaks down to the parent radical which then functions as the active principle

Pharmacology

The sulfones are rapidly absorbed and achieve good blood concentration which unfortunately cannot be maintained through rapidity of renal excretion

SULFONES

| Preparation | Route | Initial Dose | Optimum Dose | Course | Inter mission | Toxicity |
|--|--------------|------------------------------------|--------------|--------|---------------|--|
| Promin (p 4481) | Intra venous | 1 gm | 5 gm | 2 wks | 1 wk | Anemia leukopenia allergic dermatitis |
| Diasone (p 4300) | Oral | 0.3 gm with 10% Sodium Bicarbonate | 0.9 gm daily | 2 mos | 2 wks | Anemia leukopenia nausea vomiting hematuria drug fever Herzhauser reaction |
| Promazole (p 4482) | Oral | 0.5 gm t.i.d. p.c. | 6-8 gm daily | 2 mos | 3 wks | As above but rare |
| Sulphetrons Experimental Use Only (p 4553) | | | | | | |

Therapeutics

The sulfones appear to be most efficacious in the treatment of leprosy. In combination with streptomycin they may prove useful in tuberculosis

Toxicity

The sulfones are toxic to erythrocytes and usually produce an anemia of greater or lesser severity. Repeated blood counts are mandatory in the control of therapy. Less frequently leukopenia and agranulocytosis are encountered.

Oral products especially may cause nausea vomiting and gastric irritation lessened and mitigated by use of sodium bicarbonate Allergic forms of dermatitis drug fevers (p 24) and intensification of rashes as in the syphilitic Herxheimer reaction (p 3281) are encountered with all products Urine specimens must be examined every few days for evidences of renal irritation (hematuria albuminuria) Toxic symptoms abate rapidly though anemia may require administrations of iron liver extract and/or whole blood transfusion Promizole seems least toxic (p 4386)

SULPHETRONE

Sulphetrone is presently available for experimental use only Its chemical formula is 4 4 bis(gamma phenyl N propylamino-diphenyl sulfone tetra sodium sulfonate) It is being tried experimentally in human tuberculosis (Lancet 2 144 1948 J A M A 139 62 1949)

Sulphetrone has no acute toxicity but chronic untoward manifestations include hemolysis leading to secondary anemia and goiterogenesis Until these latter can be eliminated it is unlikely that sulphetrone will be distributed for use in general practice

SURAMIN SODIUM U.S.P

[Naphuride Germanin Fournieu 309 Antryptol Bayer 205]

Suramin is a urea derivative (Hexa sodium bis (m aminobenzoyl m amino-p methylbenzoyl) 1 naphthyl amino 4 6 8-trisulfonate carbamide) with potent trypanocidal activity

Available Products

Naphuride Sodium U.S.P 1 gm ampuls (Winthrop) Sprinkle powder on surface of diluent to avoid clumping Use at once

Therapeutics

An effective relatively non toxic trypanosomicide used in African sleeping sickness both gambesian and rhodesian (p 533)

For prophylaxis inject intravenously 1 gm in 10% sterile distilled water Repeat once a week for two doses and then at intervals of three months

For active treatment give an initial probatory dose of 0.3 gm If there are no untoward reactions inject 1 gm in 10% sterile distilled water intravenously or intramuscularly once weekly for five to ten weeks In severe illness the first three doses may be injected on alternate days (p 4594)

Toxicity

Albuminuria hematuria cylindruria hemolysis (in large doses)
 toxicoderms (p 24) chills fever headache nausea and pruritus
 Rarely conjunctivitis stomatitis purpura and agranulocytosis
 Avoid with renal insufficiency (p 2275)

SYPHILIS

[Lues]

Principles of Diagnosis and Therapy

1 Most expert discussions of syphilis are so unnecessarily complicated and obtuse that the practitioner may welcome a simplified restatement of Principles of Diagnosis and Therapy

2 During life the definitive laboratory diagnosis of syphilis is established only by darkfield demonstration of spirochetes (Fig 7 p 46) in secretion obtained from the chancre (Fig 48 p 335) or a secondary lesion (Fig 49A B C D E F p 338)

3 Serologic tests for syphilis are notoriously unsatisfactory They are consistently negative in the highly infectious primary stage of the disease and at any time may give false positive responses to at least fifty eight recognized non syphilitic factors To the published list of disturbances giving the false positive serologic test for syphilis (p 337) Stokes recently added streptococcal infections pemphigus and subacute bacterial endocarditis

4 The biologically false positive serologic test causes confusion in many ways Interpreted as indicative of syphilis patients are unwittingly stigmatized and unnecessarily treated Additionally the syphilitic who has a biologic false positive test may be considered serologically resistant Under this latter circumstance initial treatments are regarded as unsatisfactory and repeated or continued therapy is recommended to the detriment alike of statistical considerations and patient comfort

5 The practitioner's safest check against misinterpretation of serologic tests for syphilis is a request for a battery of reactions as performed by the Venereal Disease Research Laboratory of the U S Public Health Service (Kolmer Kahn Klein Mazzoni Hinton) Perhaps the best warning of a non specific positive result is serologic discord in which certain tests are negative or feebly positive while others are positive in higher dilutions

6 Given a report which is positive across the board the practitioner need have no feeling of insecurity concerning the laboratory diagnosis However the fact that the patient carries a positive test does not mean necessarily that presenting symptoms and signs are syphilitic in origin Interpretation of laboratory findings remains the province of the clinician and decisions often challenge his keenest acumen

7 The previous statement that irrespective of the stage of syphilis the practitioner owes it to himself and to his patient to collect cerebro spinal fluid for a complete examination (p 339) cannot be too strongly

emphasized Knowledge that the spinal fluid is positive before institution of therapy assists the practitioner in the arrangement of his therapeutic program and also serves as a protection to him in the event that his judgment later is criticized In the presence of abnormalities of the fluid the patient is given a more guarded prognosis and the necessity for retreatment and prolonged observation is accentuated

8 It is customary to subdivide clinical manifestations of syphilis into various stages which include primary seronegative primary sero positive secondary early latent late latent asymptomatic neuro syphilis tertiary syphilis neuro syphilis and cardiovascular visceral pre natal and pregnancy infections (Table 22 p 336) We regard these artificial classifications as misleading and inaccurate The high percentage of patients who show positive cerebrospinal fluid findings in early stages of infectious syphilis illustrates the fact that the spirochete is widely disseminated from the start of infection Presentation of different treatment schedules for each stage of syphilis produces confusion that is not justified by results obtained It is for this reason that we favor a single treatment schedule for all stages and phases of syphilis with certain minor variations later described in detail

9 *Treponema pallidum* is sensitive to penicillin aureomycin chloramphenicol streptomycin and arsenicals

On all counts penicillin is the antibiotic of choice in the treatment of all stages of syphilitic infection Given in adequate dosage for a sufficiently long period of time and repeated at least once under any circumstances the percentage of cures exceeds even those obtained by massive chemotherapy by the intravenous drip method (five day treatment p 344) Against the latter's significant toxicity (approximating 1 per cent) and its treatment mortality (approximating 0.25 per cent) penicillin therapy of syphilis has negligible untoward reactions and no mortality whatsoever

10 Despite the fact that the hazards of arsenic toxicity have been greatly lessened through introduction of the antidote BAL (p 4251) we favor unmodified and uncomplicated penicillin therapy for the original treatment and for first retreatment of all patients with syphilis irrespective of the stage of the disease It is quite likely that aureomycin or chloramphenicol may replace arsenicals as second choices since both products are without significant toxic reactions and are efficacious when given orally

11 Until experts have definitively demonstrated significant advantages when penicillin and/or aureomycin chloramphenicol are supplemented by arsenicals in the treatment of syphilis it is our opinion that the practitioner should reserve the hazardous therapeutic agent for use in the rare patient who is sensitive to the newer antibiotics or who shows clinical or serologic resistance following initial treatment and one course of retreatment

12 As a spirocheticidal agent bismuth is so feeble as compared to newer products that it does not merit consideration except for possible prevention of the controversial Herxheimer reaction preliminary to treatment of cardiovascular and advanced neurologic infections

Completely obsolete as antisyphilitic drugs are trivalent arsenicals other than mapharsen and clorarsen pentavalent arsenicals and particularly tryparsamide mercurials and combinations of arsenic and bismuth

13 The importance of naturally acquired active immunity to syphilis originally demonstrated by Bruusgaard (p 333) has been strikingly confirmed at the Yale University School of Medicine (Rosahn J Ven Dis Inf 27 293 1946) The Yale figures based on the spontaneous course of untreated syphilis check very closely with Bruusgaard's statistics In the latter the total of spontaneous cures and asymptomatic latency with positive serology approximated two thirds of those who had been originally infected (p 340) Rosahn found that only 38.9 per cent of 198 autopsied patients who had received no treatment for their disease presented any anatomic changes at autopsy consistent with the diagnosis of syphilis and the majority of the 198 patients (121 or 61.1 per cent) presented no evidence at autopsy of tissue alteration suggestive of syphilitic disease

14 So important are Rosahn's findings that his general conclusions are worthy of restatement in his own words If it is assumed that our findings represent a fairly accurate summary of the end results of untreated syphilis it can be concluded that had treatment been administered adequately and early to the entire group it could not possibly have effectively altered the course of the disease in more than 4 out of 10 patients since 6 out of 10 untreated patients died with no evidence of syphilis at autopsy On closer inspection even this ratio of 4 out of 10 patients who could have benefited by treatment is excessive because only a little more than 2 out of the 10 actually died as a result of syphilis The remaining 8 out of 10 patients with syphilis all succumbed to an unrelated disease process and the fact that some of them had developed a syphilitic lesion or a positive serologic test for syphilis was apparently of no great significance Treatment of the whole group could then have possibly altered the end results in only the two who actually died of syphilis out of ten untreated cases

15 The participation of allergic hypersensitivity in syphilitic manifestations remains incompletely evaluated Hypersensitive tissue reactions might well explain lesions in which demonstration of spirochetes is difficult or nearly impossible as exemplified by tabes dorsalis paresis and gumma (pp 1963 2465 2938 and Figs 49 G and H p 338) Furthermore the immune bodies that produce serologic tests for syphilis absent during infectious phases of the disease and only demonstrable after an incubation period approximating three weeks to three months may measure hypersensitivity rather than infectivity

Practical Management

Prophylaxis

1 Except for prenatal infections syphilis is almost always a venereal disease Previously recommended measures for venereal prophylaxis (p 3122) are woefully inadequate they do not prevent extragenital

transmission of the disease as for example by kissing they are not efficacious against venereal disease of virus origin (lymphopathia venereum) or those caused by *H. ducreyi* (chancroid) or *donovani* (granuloma inguinale)

2 The importance of venereal prophylaxis is such that intensive and combined antibiotic therapy is warranted for the prevention of all five venereal diseases. To accomplish this in syphilis and gonorrhea it is probably necessary only to inject intramuscularly 300 000 units of crystalline procaine penicillin G and to prescribe concurrently for the remaining infections capsules of aureomycin or chloramphenicol in daily doses of 3 to 4 gm for three to five days

3 Despite a high percentage of successful results obtainable by minimum doses the practitioner cannot content himself with anything less than an unblemished prophylactic rate. In point of fact the inconvenience and expense of overtreatment additionally may serve to discourage the patient from frequent exposure

4 It is our personal opinion that the exposed patient should receive no less than 6 million units of crystalline procaine penicillin G in aqueous suspension given over a period of ten days. This can be accomplished by injecting intramuscularly 600 000 units daily substituting the preparation in oil with 2% aluminum monostearate before the intervening Sunday or holiday. Concurrently to prevent penicillin resistant diseases we favor oral administration of 2 to 4 gm of aureomycin or chloramphenicol given in 4 divided doses for at least three to five days

5 During antibiotic therapy and for two weeks thereafter prescribe 200 mg of antihistamine daily to prevent hypersensitivity reactions to invading microbe or therapeutic antigen

■ In addition to preliminary physical examination and serologic testing the patient must return at monthly intervals for at least six visits for repetition of tests. Only then if all is well can complete assurance as to the success of prophylactic therapy be given (p 347)

Immediate Care

1 Before institution of therapy do a complete physical examination draw blood for performance of a battery of serologic tests obtain cerebrospinal fluid and subject it to the same tests used on serum get an x ray of the chest for determination of pre treatment appearance and size of heart and aorta make a neurologic survey (p 1402) and order an electrocardiogram

2 If the diagnosis of syphilis rests completely on serologic tests look for the presence of other diseases capable of giving false positive reactions (p 337). Be particularly wary when there is serologic discord with negative responses to some tests and low titers in others the more especially if a reliable patient denies sexual exposure

3 In the presence of advanced cardiovascular or neurologic lesions precede penicillin therapy with 6 to 10 weekly intramuscular injections of 2 cc of insoluble bismuth subsalicylate in oil (p 4255)

4 Under all other circumstances immediately institute intensive penicillin therapy. Deposit intramuscularly 600 000 units of crystalline procaine penicillin G in aqueous suspension. Repeat injections daily for a minimum period of fifteen days to total 9 million units. Before the intervening Sunday or holiday substitute the oil suspension with 2% aluminum monostearate. Make up the total of 9 million units by an added injection of aqueous suspension on the sixteenth day.

5 Concurrently with penicillin and for a period of two weeks after the last dose give 200 mg daily of antihistamine using pyribenzamine or benadryl.

6 Inasmuch as other venereal diseases have a much shorter period of incubation than syphilis it is not necessary to give concurrent prophylactic treatment to the patient with active infection unless there has been repeated exposure after acquisition of luetic disease.

7 Should it be necessary to protect concurrently against the venereal diseases not affected by penicillin (chancroid lymphopathia venereum and granuloma inguinale) or should it be thought advisable to supplement penicillin therapy with another potent antibiotic prescribe oral doses of aureomycin or chloramphenicol. Order 4 to 6 gm daily in 4 divided doses for the fifteen day period during which deposits of penicillin are being made.

Continuing Care (Favorable Course)

1 Have the patient report at weekly intervals for three months following initiation of therapy. At each visit repeat physical survey and serologic tests.

2 Whether or not the patient has clinical or serologic evidences of relapse (p 347) recommend a second course of therapy three months after the first course has been completed.

3 Continue monthly observations after termination of the second course for an additional six months. If the criteria of cure (p 347) are met no further therapy is required but the patient is advised to report annually for a five year period.

Continuing Care (Unfavorable Course)

1 For the patient with penicillin sensitivity the practitioner has his choice of oral treatment with aureomycin or chloramphenicol or a course of ambulatory conservative treatment as advised by the cooperative clinical group using trapharsen and bismuth (Table 23 p 345).

2 For aureomycin therapy O Leary (Mayo Clinics 1948) used doses of 500 mg every four hours for 5 days 750 mg every four hours on the fifth and seventh days and 500 mg every four hours thereafter until a total of 44.2 gm had been taken. With this program untoward reactions included nausea and vomiting but darkfield examinations were negative within sixteen hours and all primary lesions were completely healed by the end of the treatment period. Despite these favorable responses it is our opinion that the private patient should receive larger doses (4 to 6 gm daily) for a longer period of time (15 days).

3 As a substitute for aureomycin in those patients who have gastric

intolerance to the antibiotic the method of Romanowsky using chloramphenicol may be tried. Romanowsky gave total daily doses of 30 to 120 mg per kilogram of body weight per day (2.1 to 8.4 gm for the average adult weighing 150 lbs). Six divided doses were prescribed at approximately 4 hour intervals over a period of four to eight days. Again we favor the larger doses (at least 6 gm) for a longer period of time (15 days).

4 In addition to arsenotherapy for the penicillin sensitive maphar en or clorarsen injections must be considered for patients who fail to fulfill the criteria of the cure (p 347) and who manifest evidences of treatment failure (p 347) following original treatment and one re treatment course of penicillin and/or aureomycin chloramphenicol.

5 Before recourse to an enotherapy look for the presence of other factors capable of giving false positive serologic tests remembering that these disturbances may afflict the syphilitic as well as the non syphilitic (p 337). Additionally it is necessary to weigh the hazards of therapy against the chances for spontaneous cure as discussed previously.

6 For re treatment of unfavorable cases the routine employed by the New York City Health Department is recommended. The penicillin course as previously detailed is repeated. At its termination the patient is given bi weekly intravenous injections of 40 to 60 mg of maphar en or clorarsen to total 20 injections. Concurrently intramuscular deposits of 2 cc of insoluble bismuth subsalicylate in oil are made once weekly for the 10 week period.

7 During arsenotherapy frequent physical examinations and analyses of blood and urine are required for early detection of evidences of toxicity. If such develop treatment is interrupted and intramuscular injections of BAL are begun (p 4251).

■ Despite contrary opinions from certain experienced syphilologists main reliance may be placed on penicillin in the management of advanced or resistant infections of the nervous system. There is no reliable proof that supplementary intrathecal instillations or hyperthermia (by malarial infection or electrically induced fever) warrant attendant inconveniences and hazards. Dattner a pioneer in malarial therapy asserts that there is almost unanimous agreement among experts that the intrathecal injection of penicillin is unnecessary and even dangerous. The same author also states that the results obtained (with intramuscular deposits of penicillin) are similar to or better than those following malarial therapy (JAMA 141:1260 1949).

TEGUMENTARY SYSTEM NEOPLASMS OF

The practitioner encounters neoplasms of the skin as part of his every day experience. The vast majority of these are benign (pp 3199-3209 Figs 911-916 p 3200 and Figs 917-920 p 3201) and require only excision or electrocoagulation for cosmetic reasons.

Pre canceroses and actual malignancies (pp 3209-3227) also occur with great frequency (Table below) Attention is drawn to them by the appearance of nodules cysts and tumors (p 3210) or fissures cracks clefts rhagades and ulcers of the skin (p 3218) Treatment of the potential or veritable skin malignancy may require consultation with dermatologist surgeon or roentgen therapist

PRE CANCEROSES AND MALIGNANCIES OF THE TEGUMENTARY SYSTEM

| Lesion | Illustration | Page Reference |
|---|-------------------------|----------------|
| Pigmented moles | Fig 916 p 3200 | p 3204 |
| Blue naevi | | p 3205 |
| Senile sebaceous adenomas | | p 3205 |
| Fibromas | | p 3206 |
| Multiple neurofibromatosis (von Recklinghausen's disease) | Fig 918 p 3201 | p 3206 |
| Multiple benign cystic epitheliomas | | p 3208 |
| Cerebriform mole | | p 3205 |
| Sebaceous cysts | | p 3208 |
| Syringocystomas | | p 3209 |
| Malignancies due to mechanical trauma | | p 3212 |
| Leukoplakia | Fig 921 p 3201 | p 3218 |
| Chronic radiodermatitis | Fig 898, p 3160 | p 3179 |
| Chronic infective ulcers | | p 3215 |
| Occupational keratoses | | p 3216 |
| Arsenical keratoses | | p 3216 |
| Senile keratoses | Fig 922 p 3201 | p 3216 |
| Seborrheal keratoses | Fig 922 p 3201 | p 3216 |
| Seborrheal keratoses (entle warts) | | p 3217 |
| Cutaneous warts | | p 3217 |
| Basal cell epitheliomas (rodent ulcers) | Fig 923 p 3220 | p 3220 |
| Squamous cell epithelioma (prickly cell epithelioma) | Fig 924 p 3220 | p 3223 |
| Paget's disease of the breast | | p 3223 |
| Bowen's disease | Fig 925 p 3221 | p 3225 |
| Melanocarcinoma | Figs 926 and 927 p 3221 | p 3225 |
| Sarcomas | | p 3225 |
| Idiopathic multiple hemorrhagic sarcomas (Kaposi's disease) | Figs 928 and 929 p 3221 | p 3225 |
| Metastatic carcinomas | | p 3227 |
| Lymphosarcoma | Fig 930 p 3221 | p 3227 |
| Mycosis fungoides (granuloma fungoides) | Figs 932 and 933 p 3385 | p 3380 |

Practical Management

1 If the lesion is single isolated and situated in a non strategic area (thoracic wall abdominal wall or back) excise widely under local anesthesia (p 3935) Try to go at least one half inch beyond the lesion in all directions Remove a segment at least one half inch in depth

Send specimen to pathologist for histologic examination. Consider x ray therapy if lesion recurs or pathologist reports that malignant cells extended to or beyond line of incision.

2. Pre cancerous or actually malignant lesions of strategic areas such as the nose, lip, cheek or eyelid require reference to the consulting dermatologist. It is his decision to weigh advantages of biopsy against hazards. He must also decide whether therapy is to be conducted by surgical excision or irradiation. If a choice is afforded, elect excision which permits histologic examination and which may be followed by irradiation therapy if necessary.

3. If the local lesion is no longer isolated and there are metastatic glands, patient must be hospitalized and prepared for a wide block dissection followed by intensive radiation therapy.

4. In the presence of multiple skin malignancies, it may be necessary to consider desperation remedies such as injection of nitrogen mustard (p 4439) or use of radioactive isotopes such as P^{32} (p 605).

TENIASIS

[Tapeworm Infestations Cestodiasis]

Principles of Diagnosis and Therapy

1. Tapeworm infestations usually result from ingestion of improperly prepared fish, beef or pork (Fig 435 p 1900).

2. Establish diagnosis by identification of segments or ova in feces (Fig 1099 p 3730).

3. Except in rare instances, tapeworm infestations do not cause systemic manifestations although a severe hyperchromic macrocytic anemia may accompany *Bothriocephalus* infestations (p 1083).

4. Treatment of tapeworm infestations has been made considerably more satisfactory through transduodenal introduction of anthelmintics and through increasing recognition of efficacy of quinacrine (atabrine) and hexylresorcinol (caprokol). With oleoresin of aspidium, these have replaced more toxic carbon tetrachloride and pelletterie.

Practical Management

1. Order low residue diet for twenty four or forty eight hours prior to administration of anthelmintic.

2. On eve of therapy, pre-cribe 30 to 45 gm of sodium sulfate with 2 glasses of warm fluid.

3. On morning of treatment, pass duodenal tube. Do not administer drug until alkaline bile stained material has been aspirated.

4. For anthelmintic of choice, give 0.6 to 1.0 gm of quinacrine hydrochloride (atabrine) USP. Improvise a solution by pulverizing and dissolving 6 to 10 tablets each of 0.1 gm dosage (Winthrop). If the duodenal tube is not used, give 3 tablets every fifteen minutes for three doses, with large quantity of fluid.

5 For second choice prepare a fresh mixture of oleoresin of aspidium To 8 gm of anthelmintic add 30 gm of sodium sulfate 30 cc of mucilage of acacia and sufficient water to make 100 cc

6 For third choice give 1 to 3 gm of hexylresorcinol available in gelatin coated capsules each containing 0.2 gm (Sharp & Dohme) If taken orally caution patient to swallow whole If instilled transduodenally remove outer capsule and suspend contents in 30 cc of mucilage of acacia and 70 cc of water

7 Whichever anthelmintic is used flush duodenal tube a few moments after drug has been introduced and then quickly withdraw

8 Two hours after introduction of anthelmintic repeat saline purge using 30 to 45 gm of sodium sulfate If there has been no bowel evacuation after another two hours initiate movement with soap-suds enema

9 Examine all stools and enema returns for two days searching for scolex (Fig 435 p 1900)

10 After six weeks if scolex has not been identified and ova or segments are still present in stools repeat therapy using same or alternate anthelmintic

TERRAMYCIN

Terramycin a product with potent antimicrobial activity is produced by growth of the mold *Streptomyces rimosus* A crystalline amphoteric substance terramycin is highly stable and can be reacted chemically with certain acids and bases to form crystalline salts In the dry crystalline state terramycin and its salts are highly stable at 25° C They maintain their potency for a period of twelve months when stored at room temperature

Available Preparations

Terramycin (Pfizer) Capsules containing 250 mg

Absorption and Excretion

Terramycin is rapidly absorbed following parenteral or oral administration It is excreted in a biologically active form primarily in urine Given orally to fasting subjects in single doses of 25 to 50 mg per kg of body weight peak serum concentrations are produced after two to four hours Average maximum serum concentrations approximate 18 micrograms per ml and average urinary excretion is 37 per cent of the total dose Serum levels remain at a plateau for two to four hours and then decline

Toxicity

Terramycin is relatively non-toxic as indicated by acute and chronic studies in experimental animals and man Human patients have received

oral daily doses of 5 gm of terramycin hydrochloride for one month without significant untoward reactions

In a few patients mild gastrointestinal disturbances glossitis looseness of stools mild nausea and vomiting are encountered Reduction in side effects is accomplished by administering capsules after meals Allergic reactions have not been seen

Bacterial Spectrum (p 4243)

Terramycin has a broad bacterial spectrum It is effective both in the test tube and in the living animal against gram positive cocci and bacilli gram negative cocci and bacilli (aerobic and anaerobic) rickettsia and certain viruses In the treatment of mild infections the recommended daily dose is 2 to 3 gm in 4 divided amounts given at 6 hour intervals In severer infections double quantities may be employed provided that toxic manifestations do not sooner develop

Therapeutics

Thus far terramycin therapy has proven successful in the management of acute pneumococcal pneumonias pneumococcal peritonitis bacterial pneumonias due to *Staphylococcus aureus* *Streptococcus hemolyticus* and *Streptococcus viridans* hemolytic and non hemolytic streptococcal invasions including acute follicular tonsillitis septic sore throat erysipelas cellulitis abscesses subacute bacterial endocarditis chronic pyelonephritis and other urinary tract infections localized staphylococcal infections and urinary tract invasion staphylococcal sepsis and endocarditis gonorrheal urethritis anthrax hemophilus influenzal invasions whooping cough acute brucellosis urinary tract infections due to *E coli* and *A aerogenes* respiratory infections due to *K pneumoniae* (Friedlander bacillus) tularemia and the rickettsial diseases including typhus fever tsutsugamushi fever Rocky Mountain spotted fever Q fever and rickettsialpox

Preliminary data also suggest that a single dose of 60 mg per kilo gram of body weight eliminates *Treponema pallidum* from the dark field in infectious syphilis Of the virus and viral like infections successful clinical results have been obtained in atypical pneumonitis herpes zoster lymphopathia venereum granuloma inguinale and parainfluenza virus AB

Terramycin has been disappointing in the treatment of typhoid fever urinary infections due to *Ps pyocyaneus* most cases of salmonellosis measles mumps malaria variola trichinosis and amebiasis

Comparison with Other Antibiotics

From what has been stated above it is clear that terramycin duplicates the remarkable antibacterial properties of penicillin and aureomycin or chloramphenicol Since there has been greater experience with antibiotics previously introduced terramycin probably will be employed mostly in the management of infections resistant to older preparations and in the treatment of the rare patient intolerant of penicillin aureomycin and/or chloramphenicol

TETANUS

[Lockjaw]

Principles of Diagnosis and Therapy

1 Tetanus is a preventable disease. In the military service compulsory active immunizations with tetanus toxoid virtually eliminated morbidity and mortality. In civilian life similar measures are of equal importance particularly in farm and rural areas where most wounds are contaminated by *Clostridia* (p. 294).

2 Passive immunization is available for those who have not had previous protection and who have suffered a possibly contaminated wound. By transfer of antibody preformed in the experimental animal (horses, cattle) immediate protection is afforded during the lag period between injection of toxoid and development of an effectual titer of antibody. Unfortunately passive immunization exposes the patient to hypersensitivity phenomena and must be preceded by ophthalmic and skin testing for hypersensitivity by desensitization where necessary and by concurrent and continued administration of antihistamines (p. 4187).

3 Early active treatment with tetanus antitoxin is reasonably effective in the neutralization of free toxin. However delayed therapy produces progressively diminishing results since toxin becomes fixed by nerve tissues where it is inaccessible to neutralization by antitoxin.

4 *Clostridium tetani* is somewhat penicillin sensitive. The antibiotic however has no antitoxic action and hence is relatively ineffective as a specific once neuromuscular manifestations have been established.

5 In the treatment of active tetanus the practitioner is faced with a dual problem. It is necessary to control by pharmacologic agents neuromuscular manifestations meanwhile maintaining a clear airway by mechanical means. Since most of the available neuromuscular relaxants and antispasmodics are also respiratory depressants patient management offers a formidable challenge to the practitioner who will require full time observation of shifting problems preferably in association with a competent nursing staff and consultants.

Practical Management

Prophylaxis

1 Advocate triple active immunization for infants, children and adults who did not serve in World Wars I or II and who have no history of previous protection. Preferably use diphtheria toxoid, alum precipitated tetanus toxoid, alum precipitated pertussis vaccine combined USP (National Drug Sharp & Dohme, Squibb, Lederle). To youngsters give three subcutaneous injections preferably at insertion of deltoid, each of 0.5 cc. at intervals of three to four weeks. For adult second and third injections increase the dose to 1 cc.

2 For the adult who has had pertussis prefer diphtheria and tetanus.

toxoids alum precipitated U S P (National Drug Parke Davis Pitman Moore Sharp & Dohme Squibb Wyeth) Inject subcutaneously at insertion of deltoid two doses each of 1 cc at an interval of four to six weeks

3 For the adult who has had both pertussis and diphtheria or who is Schick negative prefer tetanus toxoid alum precipitated U S P (Lederle Lilly National Drug Parke Davis Pitman Moore Sharp & Dohme Squibb Wyeth) Inject subcutaneously at insertion of deltoid 1 cc Repeat once after an interval of four to six weeks

4 Every second or third year and immediately after infliction of a penetrating or contaminated wound recall tetanus immunity in the protected with a booster dose of 0.5 to 1 cc of tetanus toxoid alum precipitated

5 The unprotected who have suffered penetrating or contaminated wounds require passive immunization with heterologous antiserum in addition to injection of tetanus toxoid Passive transfer of preformed antibody is required in the lag period between introduction of antigen and development of a sufficiently high titer of antibody to protect against *Clostridia*

6 Since passive immunization requires use of heterologous serum precede injection by ophthalmic and intradermal sensitization tests using 1 to 10 dilution of serum (p 555) Those with negative responses may be immunized immediately Those with evidences of hypersensitivity require desensitization (p 4191) In either instance favor prophylactic use of antihistamines For the hyposensitive prescribe daily oral doses of 200 mg of pyribenzamine or benadryl to the hypersensitive give an intramuscular injection of 5 cc of 1% benadryl followed by oral maintenance doses of antihistamine continued for at least two weeks after the last injection of potential allergen

7 Since the nature of the bacterial contaminants of the wound can not be ascertained at the time of decision provide blanket coverage against *Clostridia* by choosing for passive immunization tetanus and gas gangrene antitoxins combined U S P (Cutter Lederle Lilly National Drug Parke Davis Pitman Moore Squibb U S Standard Products Co Wyeth) Commercial products are packaged so that a single syringe or vial contains 1500 units of tetanus antitoxin and 2000 units each of *C. perfringens* and *C. septicum* antitoxins After testing desensitization where necessary and prophylactic administration of antihistamine inject 1 unit of combined antitoxins into the wound area and an additional 2 units intramuscularly into deltoid or buttocks Prepare to repeat deposits daily or every second day for at least a week even if superficial appearances are satisfactory

8 In addition to serum prophylaxis deposit 300 000 to 600 000 units of crystalline procaine penicillin G in aqueous suspension for antibiotic protection

9 Finally under local or general anesthesia open the wound to its depth Thoroughly cleanse and irrigate with an oxidizing agent such as 1 4000 potassium permanganate or zinc peroxide (Fig 1159 p 3965 and p 3968)

Immediate Care

1 If possible arrange for hospitalization. Inaugurate non specific measures for treatment of the infected patient (p 67). Caution attend ants of dangers associated with handling of wound and dressings.

2 Send for an endotracheal tube, an aspiration suction apparatus and an oxygen tank and mask for emergency use. If unfamiliar with endotracheal intubation, summon the specialist anesthetist or laryngologist.

3 Discuss advisability of prophylactic rather than emergency tracheotomy (p 3958). Consider well the conclusion of Godman and Adrian (JAMA 141 756 1949) that elective tracheotomy is indicated in all cases of tetanus except the mildest form in which the diagnosis is actually questionable.

4 For immediate control of muscle irritability and convulsions for surgical care of the wound and for general anesthesia in the event that elective tracheotomy has been agreed upon, choose between tr. bromoethanol (avertin) administered by rectum and thiopental sodium (pentothal) injected intravenously.

5 Unless well stalled, elect rectal administration of tribromoethanol (avertin). Prepare 2.5% solution according to directions supplied by manufacturer (p 3837). Approximate a dose of 50 mg of undiluted drug per kilogram of body weight (1 cc per pound of body weight of the 2.5% solution). Instill tested and warmed solution into rectum using male catheter and funnel. Hold buttocks firmly together during introduction to prevent expulsion particularly by infants and young children.

6 As soon as patient is anesthetized, consider elective tracheotomy as previously mentioned, incise, cleanse and irrigate wound and set up an intravenous drip.

7 Into intravenous infusion introduce a priming dose of penicillin. Preferably give 10 to 25 million units of crystalline potassium penicillin G dissolved in 100 to 200 cc of physiologic saline solution.

8 During course of penicillin infusion, make ophthalmic and intracutaneous tests for hypersensitivity to horse serum using diluted material supplied by manufacturer.

9 After sensitivity tests have been read and following completion of penicillin infusion, introduce 5 cc of 1% benadryl into drip for prevention of hypersensitivity reactions, whether or not the patient gives evidences or a history of hyperallergy.

10 Desensitize the hypersensitive patient according to technic else where outlined (p 4191).

11 To the hyposensitive individual, give massive doses of combined tetanus and gangrene antitoxin. If the intravenous drip is still running, introduce 100,000 to 200,000 units of antitoxin in 200 to 500 cc of physiologic saline. Start the intravenous drip at an initial rate of 30 drops to the minute. Increase later to 60 drops per minute if there is no untoward reaction. Additionally, inject into the vicinity of the wound at least 1 unit of combined tetanus and gangrene antitoxins.

12 Whether or not the patient is normally or abnormally sensitive

and whether or not antihistamine has been introduced prepare separate barrels containing 1 1000 epinephrine hydrochloride for subcutaneous or intramuscular injection and 1 10 000 solution for direct intravenous introduction in the event that hypersensitivity phenomena are encountered (p 4187)

Continuing Care (Favorable Course)

1 On recovery from general anesthesia even if all appears well continue the intravenous drip for a period of at least twenty four and preferably forty eight hours

2 Maintain antibiotic levels by introduction at 4 to 8 hour intervals of 2 to 5 million units of crystalline potassium penicillin G dissolved in saline solution

3 Continue maintenance of high antibody titers with intravenous introduction of 50 000 to 100 000 units of antitoxin preceded by 5 cc of 1% benadryl for continued antihistamine prophylaxis

4 Irrigate wound frequently with 1 4000 potassium permanganate or with zinc peroxide

5 For general anesthetic effects of tribromo-ethanol or pentothal substitute the combination of phenobarbital with mephene in (tolserol) Endeavor to keep the patient relaxed but not unconscious Depending on the age of the patient and the severity of symptoms prescribe 0.03 to 0.13 gm ($\frac{1}{2}$ to 2 gr) of phenobarbital with 0.062 to 0.750 gm (1 to 12 grains) of mephenesin (marketed as tablets of tolserol each containing 250 mg) Repeat the combined products when restlessness or spasm again reappears In the experiences of Godman and Adriani phenobarbital and tolserol were exceedingly satisfactory in controlling muscular rigidity and spasm in moderately severe tetanus They required repetition on an average of four hours These authors found barbiturates alone given orally rectally intramuscularly or intravenously ineffective in controlling muscular rigidity and spasm of even moderately severe tetanus despite their excellent sedative action Similarly mephene in without phenobarbital was less effective as a neuromuscular relaxant and unsatisfactory for purely sedative effect

6 As substitutes for phenobarbital mephenesin the practitioner has choice of intravenous procaine curare chloral hydrate and paraldehyde In their study reflecting favorable results with the phenobarbital myanesin combination Godman and Adriani took occasion to test infusions of 0.1% procaine hydrochloride given intravenously in 5% dextrose and d-tubocurarine chloride in peanut oil with myricin

7 Of procaine Godman and Adriani state the following

Procaine used alone is not effective Its stimulating effect on the central nervous system must be overcome with a depressant of the central nervous system (pentothal) In the light of difficulties encountered by experienced anesthesiologists the practitioner treating an occasional patient with tetanus will certainly seek less demanding and less hazardous means for sedation than that offered by intravenous procaine

8 From their experiences with curare Godman and Adriani con

cluded that the results were not always predictable and that treatment by this method had many of the disadvantages of curare therapy by the multiple dose method as well as the disadvantages of causing massive overdosage

9 Experience with chloral hydrate also resulted in discouraging findings in the hands of these same investigators who concluded that very severe respiratory depression accompanies the doses of chloral hydrate used in all patients

10 Paraldehyde untested by Godman and Adriani is highly regarded by Costello (J Miss M A 46 582) who obtained favorable relaxation with doses of 20 to 40 cc given orally or rectally If tribromo ethanol (avertin) is not readily available paraldehyde may be substituted provided that its unpleasant characteristics can be overlooked

Continuing Care (Unfavorable Course)

1 If the problem is essentially that of respiratory failure perform tracheotomy under local anesthesia if the procedure has not already been accomplished Oxygenate preferably in a tent Provide for artificial respiration if required

2 If respirations are not seriously depressed and the problem is essentially that of neuromuscular irritability induce general anesthesia preferably with tribromo ethanol (avertin) as previously described Under anesthesia perform tracheotomy and establish intravenous drip

3 Maintain antibiotic levels with introduction of 1 to 25 million units of crystalline potassium penicillin G in saline solution at a rate of 30-60 drops per minute

4 After penicillin infusion has been completed introduce 5 cc of 1% benadryl Follow by 50 000 to 100 000 units of tetanus and gas gangrene antitoxins combined diluted to 200 cc with saline solution

5 Alternate penicillin antihistamine and antitoxin

6 Repeat rectal instillations of tribromo ethanol (avertin) as often as needed the average interval being 3 or 4 hours in severe tetanus (Godman and Adriani loc cit)

7 If neuromuscular irritability persists despite anesthesia pass a stomach tube and introduce an improvised solution made by dissolving 4 to 6 tablets each of 250 mg strength of mephenesin (tolserol)

8 Consider intrathecal or intracisternal introduction of antitoxin and antibiotic Opposed by most authorities for reasons elsewhere detailed (p 4409) these procedures are favored by Firor who advises instillations of 15 000 to 20 000 units of tetanus antitoxin under general anesthesia to which may be added 25 000 to 50 000 units of penicillin (Bull Johns Hopkins Hospital 62 91)

9 Remember that the effects of tetanus toxin on nerve tissue do not persist beyond a few days If patient can be sustained over these critical hours recovery may be confidently anticipated Maintain artificial respiration and oxygenation as long as heart sounds are audible

10 During the concentration on more imperative problems do not forget less urgent requirements such as catheterization of the urinary bladder and evacuation of the lower bowel

TETRACHLORETHYLENE NF

Tetrachlorethylene is a colorless fluid used as an anthelmintic in uncinariasis (p 1903) intestinal distomiasis (p 1898) ascariasis (p 1906) and trichiuriasis (p 1906) It is the preparation of election in uncinariasis and intestinal distomiasis but is second choice to hexyl resorcinol (p 4356) in ascariasis and trichiuriasis It is preferred to carbon tetrachloride (p 4198) which it has replaced because of lesser toxicity

Available Products

Tetrachlorethylene NF (in soft gelatin capsules) 1 cc

CAUTION Discard capsules exposed to air (p 1895)

Therapeutics

One week preceding drug Full diet Avoidance of alcohol and fat

Preceding night Saline purge

Treatment Give 3 capsules (3 cc) on arising Two hours later Repeat saline purge Permit no food until bowels have moved Repeat in three weeks if necessary

Toxicology

Nausea vertigo headache (p 1895)

THALAMYD

[Phthalylsulfacetimide]

A sulfonamide preparation midway between soluble and insoluble products Unlike other sulfonamides the compound is absorbed in substantial amounts by the wall of the gut Hence it produces its effects on the alkaline intestinal tract without causing detectable sulfonamide levels in the blood stream

Available Products

Thalamyd Tablets 0.5 gm (Schering)

Pharmacology

Taken orally in a daily dosage range of 4 to 8 gm thalamyd reduces the bacterial count of the stool in a manner comparable to that of insoluble sulfonamides Particularly sensitive are Shigellae Streptococcus faecalis Proteus vulgaris Salmonellae coliform bacilli and Pasteurellae Within forty eight hours the bacterial count is reduced to one tenth of the original numbers of organisms by the seventh day of treatment Sterile stools may be obtained in the majority of subjects

Like the insoluble sulfonamides therapeutic doses of thalamyd do not produce detectable blood levels. However in contrast to older preparations thalamyd diffuses into the intestinal wall penetrating mucosa muscularis and even serosa. Separate analyses of the three layers of the intestine reveal appreciable concentrations of thalamyd so that the antibiotic is capable of direct attack on susceptible pathogenic organisms within the intestinal wall (p 4548)

Therapeutics

Recommended doses of thalamyd in dysentery and severe fulminating ulcerative colitis are 3 gm three times daily after meals for ten days. In the more chronic forms of ulcerative colitis thalamyd administration must be continued in doses of 2 gm daily for a month or so. In abdominal surgery the adult of average weight is given 3 gm five times daily for four to five days pre operatively and for the first two postoperative days.

Toxicity

Significant toxicity from thalamyd has not as yet been encountered. Except for an occasional tendency to produce frequent loose stools no side effects or untoward manifestations have been reported.

THROMBO ANGIITIS OBLITERANS

Principles of Diagnosis and Therapy

1 Regard thrombo angitis obliterans (p 1029) as a chronic tuberculin type hypersensitivity with predominant manifestations in peripheral arteries and veins (Fig 1177 p 4028)

2 Possible sensitizing allergens are tobacco and the Rickettsiae of typhus fever (p 369)

3 Anti infective agents have no place in the treatment of thrombo angitis obliterans

4 Specific management includes exclusion of tobacco administration of antihistamine (p 4212) and application for cortisone (p 4145) or ACTH

5 Symptomatic management parallels that for peripheral vascular disease of arteriosclerotic etiology (p 997)

THROMBOSIS AND EMBOLIZATION

[Thrombo embolic Disturbances]

General Principles of Diagnosis and Therapy

1 Extravascular coagulation of circulating blood constitutes a major defense mechanism. By contrast intravascular thrombosis is a formidable threat alike in the fields of medicine and surgery (p 1123)

2 Intravascular thrombosis may occur within the lumen of arteries and veins and intramurally within cavities of the heart

3 Arterial thrombotic processes compromise the local vascular basin. Protracted ischemia inevitably results in tissue inanition and necrosis as exemplified by gangrene of extremities in peripheral vascular disease and by myocardial infarction secondary to coronary occlusion

4 Venous and intramural thromboses less menacing locally impose the greater hazard of distant embolization as exemplified by pulmonary infarction following peripheral phlebothrombosis and by cerebral infarctions secondary to intramural clotting

5 With successful antibiotic treatment of infectious diseases intravascular thrombosis and neoplastic disease currently share the dubious honor of leadership in the causes of death in the United States

6 Irrespective of the location of the intravascular clot fundamental therapeutic problems are essentially alike. Hence the present section includes discussions of phlebothrombosis and thrombophlebitis, coronary and cerebral thromboses and peripheral vascular occlusions together with complicating infarctions and embolizations

7 Experienced practitioners, internists and surgeons recognize local and systemic predispositions to intravascular thrombosis

8 Local predisposing factors include peripheral arterial disease (arteriosclerosis, thromboangiitis obliterans), peripheral venous disturbances especially varicosities, interference with local blood supply (constriction or pressure due to garters, binders, casts, splints, bandages, stirrups, abdominal distention, the pregnant uterus, abdominal tumors, etc.), surgical procedures involving structures within abdominal and pelvic cavities, particularly hysterectomy, prostatectomy, appendectomy and cholecystectomy, trauma especially crushing injuries, circumscribed infections particularly pyoderms and dermatophytoses and exposure to cold

9 Systemic predisposing factors include constitutional tendencies revealed by the family history, generalized vascular disease (arteriosclerosis), metabolic disturbances particularly obesity, diabetes and hypothyroidism, senility, co-existence of wasting disease, inadequacies of the circulation due to cardiac irregularities and forward or backward failures (pp 920 and 941), prolonged immobilization, the presence of thrombophilia (flabby musculature, obesity, low basal metabolic rate, bradycardia, subnormal temperature, varicosities and rapid coagulation time), excessive use of or sensitization to products of smoking (p 3384) and thrombocytosis particularly following splenectomy (p 1118)

10 The *prophylaxis* of thromboembolic disturbances involves efforts to eliminate or neutralize local and systemic predisposing factors. More concretely the practitioner aims to improve the local circulation, remove factors productive of stasis, clear up areas of infection, avoid trauma, effect weight reduction, reduce hyperglycemia, correct hypothyroidism by administration of thyroid extract, improve muscular tonus by early ambulation and corrective exercises, eliminate tobacco

limit use of antibiotics and digitalis restore sinus rhythm preferably with quinidine establish a regimen to relieve the chronic passive congestion of backward failure (p 941) and reduce coagulation time by use of anticoagulant drugs (p 4200) The surgeon assists his medical colleague by sharp and precise technical procedures early ambulation avoidance of constricting bandaging and abdominal distention and by postponement of elective procedures until thrombophiles particularly can be gotten into optimum condition for operative procedure

11 Active treatment of intravascular thrombosis whether arterial or venous is mainly dependent on cautious and considered use of anti-coagulant drugs For the general practitioner at least the current preparation of choice is heparin deposited subfascially according to the technic of Loewe

12 Supplementary surgical procedures aimed at relief of thromboses or embolizations include induction of sympathetic blockade ligation of thrombosed vessels thrombectomy embolectomy and amputation Each technical procedure requires at least temporary interruption of anti-coagulant therapy

13 Experienced physicians who have lived through the treacherous hazards of intravascular thrombosis need not be reminded that there is no such thing as a mild or insignificant phlebothrombosis Each individual attack is a precarious complication which may terminate fatally at any given moment despite what appear to be insignificant local manifestations

TESTS OF COAGULABILITY

Coagulation Time (Lee White Howell)

The bedside method for estimation of coagulation time is technically simple However results will be inaccurate and misleading unless each detail is executed with meticulous accuracy

Equipment

- 1 2 cc syringe with 18 or 20 g needles $1\frac{1}{2}$ long
- 2 4 test tubes (75 x 10 mm)
- 3 Test tube rack

CAUTION Syringes needles and test tubes must be thoroughly cleaned and absolutely dried Whether purchased new or used previously rinse equipment in cold water clean with a brush wash with wetting solution (Alconox Scientific Standards Co New York N Y) rinse again with water and drain until thoroughly dried Before sterilization and assembly test barrel and piston to assure a snug fit since admixture of aspirated air bubbles destroys accuracy of tests Dry sterilize both syringes and needle preferably in autoclave

Technic

- 1 Clean skin thoroughly with alcohol Wait for complete drying since contamination with alcohol invalidates results
- 2 Enter vein by precise puncture Fumbling venipunctures produce false readings from contamination with tissue juices If vein is not cleanly negotiated, select another vein even though this means an additional puncture for the patient
- 3 Using only gentlest suction on piston withdraw 2 cc of blood Note precise time
- 4 Withdraw needle and disconnect from barrel of syringe

- 5 Gently transfer about one finger breadth of blood into each of 4 test tubes previously placed in a test tube rack. Discard blood that has been admixed with air.
- 6 Wait patiently for five minutes protecting tubes from jarring or agitation.
- 7 After five minutes remove first tube from rack and make following observations:
 - (a) Does the blood have a uniform appearance or is there a separation into clear supernatant plasma and sediment of erythrocyte? Thoroughly heparinized blood clearly separates.
 - (b) On tilting how rapid is flow of blood? Blood that is about to clot flows slowly as a sludge; thoroughly heparinized blood flows rapidly.
 - (c) On tilting is surface level of blood quite uniform or is it wavy? Blood that is about to clot appears uneven; heparinized blood has a clear linear surface level.
 - (d) Has any blood adhered to inner surface of tube? Blood that is about to clot adheres in patches; heparinized blood reveals no evidence of stickiness.
 - (e) Can test tube be inverted without spillage? Clotted blood jells completely whereas fluid heparinized blood spills.
 - (f) Under the same careful conditions described for the first tube make identical visual observations successively on the second, third and fourth tubes. Do not agitate any tube until its predecessor has thoroughly clotted and can be inverted without spillage.
 - (g) Report the coagulation time as the span between withdrawal of blood from the vein and complete clotting in the fourth tube. This eliminates the error that is necessarily introduced by observation and agitation of the first three tubes during the course of preliminary inspections.
 - (h) Under normal conditions the coagulation time varies between eight minutes on the low side and fifteen minutes on the high side. More rapid clotting is encountered in thrombophiles; delayed coagulation is seen in hemophiles and treated patient who are either satisfactorily heparinized or hyperheparinized (failure of coagulation before one hour).
 - (i) Careful observers will note technical differences in the bedside coagulation test. There may be considerable variation in the respective coagulation times of each of the four tubes. On this account experienced clinicians place greater reliance on separation of serum from cells as an index of adequate heparinization. So long as the cells settle and leave a clear supernatant fluid the therapeutic goal of rendering the circulating blood relatively uncoagulable has been accomplished.

Prothrombin Activity (Quick)

Reagents

- 1 Commercial preparation of rabbit brain dehydrated with acetone
- 2 Physiologic saline
- 3 10th molar sodium oxalate made by dissolving 1.34 gm. in 100 cc. of sterile distilled water
- 4 40th molar calcium chloride solution made by dissolving 0.278 gm. of the anhydrous salt in 100 cc. of water
- 5 Sterilized and thoroughly dried 2 cc. syringes and needles prepared as for estimation of coagulation time (p. 4572)
 - Centrifuge
 - Water bath
 - Time clock
- 9 Thromboplastin reagent made by mixing 0.15 gm. thromboplastin (Difco) and 2.85 cc. of saline in a test tube (9 x 100 mm.) placed in a water bath of 45-50 C. for ten minutes, mixed and let stand for sedimentation of coarse particles after which 2 cc. of the supernatant fluid is removed and stored in a stoppered vial at 5 C.

Technic

- 1 Obtain blood by venipuncture under precautions employed for coagulation time (p. 4572)
- 2 To a graduated centrifuge tube containing 0.2 cc. sodium oxalate (M/10) add sufficient blood to bring to 2.0 cc. volume. Mix thoroughly.

- 3 Into each of three test tubes (9 x 65 mm) introduce 0.1 cc saline 0.1 cc plasma and 0.1 cc thromboplastin. Stand at room temperature for fifteen minutes.
- 4 Warm tubes in water bath at 37° C for one minute; add to each 0.1 cc calcium chloride (M/40) previously warmed to 37° C.
- 5 Start stop watch at instant of addition of calcium salt.
- 6 Keep tubes in water bath for five seconds.
- 7 Remove tubes and observe against source of light. Invert to observe exact time of clot formation and record the number of seconds.

Calculation

$$\frac{\text{Prothrombin Time of Control}}{\text{Prothrombin Time of Patient}} \times 100 = \text{per cent prothrombin activity}$$

Link and Shapiro Modification of Quick Method

The Committee of the American Heart Association studying anticoagulant therapy of coronary thrombosis favors estimation of prothrombin activity by the Link-Shapiro modification of the Quick method.

Reagents [Link-Shapiro]

- 1 Thromboplastin Reagent (Maltine). Add 50 mg of commercial thromboplastin to 2.5 cc of normal saline. Keep mixture in water bath at 50 to 55° C for 10 minutes. Cool to room temperature. Add 2.5 cc of M/40 calcium chloride. Stir with glass rod for four minutes. Centrifuge for ten minutes.
- 2 Physiologic saline
- 3 M/10 sodium oxalate (p. 4573)
- 4 M/40 calcium chloride (p. 4573)
- 5 Sterile dry 2 cc syringe and needles as prepared for estimations of coagulation time (p. 4572)
- 6 Centrifuge
- 7 Water bath
- 8 Time clock

Technic

- 1 Obtain at least 50 cc of whole blood by clean venipuncture as for estimation of coagulation time (p. 4572). Simultaneously or shortly thereafter obtain blood similarly from a normal control.
- 2 Transfer 4.5 cc of each blood specimen to a clean test tube containing 0.5 cc of M/10 sodium oxalate.
- 3 Send specimens immediately to clinical pathologist.
- 4 Centrifuge blood specimen to separate plasma from erythrocyte sediment.
- 5 To 0.2 cc of thromboplastin reagent add 0.1 cc of plasma. Place in water bath at 37.5° C.
- 6 With stop watch note time of clot formation in patient's blood and normal control.

Calculation

Calculate prothrombin activity according to the formula

$$C = \frac{k}{pt - a}$$

C = concentration or prothrombin activity in per cent of normal

pt = prothrombin time

k = constant with value of 303

a = constant with value of 8.7 provided that the reading for normal plasma is 12 seconds

If prothrombin time of the normal exceeds thirteen seconds dilute plasmas with one-fourth and eight parts of isotonic sodium chloride solution. Repeat tests and report in terms of 50%, 20%, and 12.5% activity.

Alternate Technic [Ziffren Owen Hoffman and Smith]

1 Using Niphanoid (Winthrop) make fresh thromboplastin solution according to manufacturer's directions

■ Place 0.1 cc of thromboplastin reagent in each of several small test tubes

3 Make venipuncture as described (p 4572) Mix 0.9 cc of whole blood with thromboplastin

4 Simultaneously obtain blood from normal control Carry out test in duplicate

5 Gently tilt each tube until clot is formed Note time

■ Compare clotting time of normal with clotting time of patient

$$\frac{\text{Clotting Time of Normal}}{\text{Clotting Time of Patient}} \times 100 = \text{per cent prothrombin activity}$$

Criticisms and Difficulties in Estimations of Prothrombin Activity

(a) The test requires venipuncture of a healthy individual each time the patient's blood is examined. If the normal control exceeds thirteen seconds the report must be withheld.

(b) A fresh preparation of prothrombin must be made up daily. The technic of procedure is exacting and for a full time technician rather than for the practicing physician.

(c) Methods of calculating prothrombin activity in the various tests vary and do not correspond. Some workers report in per cent of normal while others report time in seconds. There is no correlation between the two sets of figures. The American Medical Association gives its approval to the expression of prothrombin activity in per cent of normal. Yet D. C. Rivers concludes that it might be wise to discard percentage reports entirely and to report in seconds with the normal also given in seconds.

(d) Finally the formulas used to calculate the per cent of normal vary and do not correspond. The method in general use according to directions of manufacturers of thromboplastin and authoritative texts of clinical pathologists employ the simple arithmetical calculation of dividing the normal (expressed in seconds) by the unknown (expressed in seconds). The answer is multiplied by 100 to give per cent of normal according to the formula

$$\frac{\text{Normal}}{\text{Unknown}} \times 100 = \% \text{ of normal}$$

The American Medical Association favors the formula

$$C = \frac{k}{pt - a}$$

In the above equation C is the concentration of prothrombin activity expressed as per cent of normal. *pt* is the prothrombin time. *k* and *a* are constants which have respective values of 303 and 8.7 provided that 12 seconds is the reading for the normal control. It is the opinion of the respondent in Queries and Minor Notes that calculation of the prothrombin per cent by dividing the normal by the abnormal is entirely erroneous.

PHLEBOTHROMBOSIS (THROMBOPHLEBITIS)**Practical Management****Prophylaxis**

1 Reduction of morbidity and mortality through introduction of effective antibiotics in the treatment of infectious diseases leave phlebothrombosis and thrombophlebitis as major complications causing incapacitation and death in medical and surgical practice.

2 In protracted and chronic illnesses and in postoperative periods consider the potential complication of phlebothrombosis in each patient who presents local or systemic predisposition to intravascular clotting (p 4571).

3 During the course of each protracted or chronic illness and following pregnancy and surgical procedures known to predispose to intravascular clotting guard against phlebothrombosis the more particularly if it is known that the patient additionally exhibits contributing tendencies to thrombosis

4 To lessen patient predisposition to intravascular clotting insist on weight reduction by dietary means (p 669) control of hyperglycemia and glycosuria (p 1252) correction of hypothyroidism through administration of thyroid extract (p 1190) abstinence from use of tobacco (p 3884) accomplishment and maintenance of good muscular tonus through exercise (p 3756) restoration of sinus rhythm in cardiac irregularities particularly through use of quinidine (p 873) and prevent on or relief of stasis due to backward failure (p 945)

5 To minimize postoperative phlebothrombosis particularly in the thrombophile postpone elective surgery until the previously described constitutional predispositions have been minimized insist on precise and gentle surgery in the hands of the most expert technician urge careful hemostasis avoid use of stirrups especially during pregnancy gynecologic and urologic procedures prevent abdominal distention by gastric intubation forbid use of tight abdominal binders circular splints and casts and of measures which limit free chest expansion request application of elastic bandages to extremities before removal from operating room on return to bed assume head down position to favor return of venous blood from lower extremities instruct nurse to urge deep breathing exercises as soon as consciousness is recovered order ventroflexion of toes against resistance many times daily and advocate early ambulation (p 4122)

6 During protracted medical illnesses and in postoperative periods particularly under circumstance which predispose to intravascular clotting consider use of anticoagulants As soon as hemostasis is secure deposit heparin subcutaneously (p 4203) Use somewhat smaller doses than employed for treatment of overt phlebothrombosis approximating 200 mg for lighter patients and 250-300 mg for those who weigh more than 150 lbs Prophylactic anticoagulant therapy following abdominal hysterectomy at the Mayo Clinic effected a reduction in phlebothrombosis in the ratio of 11 to 1 of pulmonary embolism from 50 to 1 and of fatal thromboembolic disease from 86 to 1

7 Continue daily deposits of heparin as indicated by bedside estimations of coagulation time (p 4572) until patient is completely ambulant and well on in convalescence

Immediate Care

1 Consider complication of phlebothrombosis in each patient who presents local or systemic predispositions to intravascular clotting the more particularly if exposed to protracted illness or surgical procedures known to contribute to the phenomenon of intravascular clotting (p 4571)

2 Do not delay diagnosis of intravascular thrombosis until classical signs of thrombophlebitis make their appearance There may be exten

give intravascular clotting long before patient complains of local pain and tenderness and considerably prior to notation of palpably indurated vessels or pain on ventroflexion of the extended leg (Homan's sign)

3 The early signs of phlebothrombosis are insidious. Suspect intravascular thrombosis when without other overt causation convalescence appears not to be as rapid as might be expected temperature fails to reach basal pre-operative level even though elevation does not exceed 0.5 to 1 F and never rises above 100 F when there is an otherwise inexplicable relative tachycardia as compared to basal rate per minute when there is a slight increase in the respiratory rate when the patient just does not look right and when there are transitory and relatively negligible complaints of occasional dizziness chest pain or limitation of inspiration by a sudden catch for contrary to general belief earliest signs of phlebothrombosis may be those of complicating embolization

4 Do not wait until physical signs are apparent in legs or chest to diagnose phlebothrombosis or pulmonary embolizations. There may be multiple infarcts of moderate size before there are audible manifestations of hazardous complications

5 Do not wait until there are roentgen signs of pulmonary embolization. Chest radiographs are notoriously misleading they may be unrevealing when subjective manifestations are definitive and when localized physical signs are picked up by the inquiring ear

6 Do not delude yourself by the belief that there is any such thing as a mild or unimportant phlebothrombosis. Each attack is a potentially precarious and hazardous complication which may terminate fatally. Do not lull yourself into a sense of security by enunciation of the hopeful prognosis which necessarily must be given to the patient

7 Whether the diagnosis of phlebothrombosis is definitive or only suggestive immediately immobilize the patient completely

8 Get rid of all possible factors predisposing to venous stasis remove abdominal bandages and circular plints or casts reduce abdominal distention through gastric intubation or a gentle rectal flush forbid smoking discontinue digitalis and antibiotics unless indications for use of these products are urgent

9 Determine blood coagulation time by the bedside method of Lee White and Howell (p 4572)

10 If there is pain or edema of involved phlebotic area perform sympathetic block of lumbar ganglions (p 4579)

11 Deposit heparin subcutaneously with or without vasoconstrictor. Estimate dose according to patient's weight and length of coagulation time (p 4203). Unless contraindicated by hypertension prefer product with vasoconstrictor

12 Precede deposit of anticoagulant with subcutaneous injection of an analgesic preferably demerol 100 mg or dolophine 25 to 50 mg. Warn patient of possibility of pain within a few hours after deposition of anticoagulant. Leave orders for repeat doses of analgesic as required

13 Unless apprehension or expense are deterrents favor oxygen

3 During the course of each protracted or chronic illness and following pregnancy and surgical procedures known to predispose to intravascular clotting guard against phlebothrombosis the more particularly if it is known that the patient additionally exhibits contributing tendencies to thrombosis

4 To lessen patient predisposition to intravascular clotting insist on weight reduction by dietary means (p 669) control of hyperglycemia and glycosuria (p 1252) correction of hypothyroidism through administration of thyroid extract (p 1190) abstinence from use of tobacco (p 3884) accomplishment and maintenance of good muscular tonus through exercise (p 3756) restoration of sinus rhythm in cardiac irregularities particularly through use of quinidine (p 873) and prevention or relief of stasis due to backward failure (p 945)

5 To minimize postoperative phlebothrombosis particularly in the thrombophile postpone elective surgery until the previously described constitutional predispositions have been minimized insist on precise and gentle surgery in the hands of the most expert technician urge careful hemostasis avoid use of stirrups especially during pregnancy gynecologic and urologic procedures prevent abdominal distention by gastric intubation forbid use of tight abdominal binders circular splints and casts and of measures which limit free chest expansion request application of elastic bandages to extremities before removal from operating room on return to bed assume head down position to favor return of venous blood from lower extremities instruct nurse to urge deep breathing exercises as soon as consciousness is recovered order ventroflexion of toes against resistance many times daily and advocate early ambulation (p 4122)

6 During protracted medical illnesses and in postoperative periods particularly under circumstances which predispose to intravascular clotting consider use of anticoagulants As soon as hemostasis is secure deposit heparin subfascially (p 4203) Use somewhat smaller doses than employed for treatment of overt phlebothrombosis approximating 200 mg for lighter patients and 250-300 mg for those who weigh more than 150 lbs Prophylactic anticoagulant therapy following abdominal hysterectomy at the Mayo Clinic effected a reduction in phlebothrombosis in the ratio of 11 to 1 of pulmonary embolism from 50 to 1 and of fatal thromboembolic disease from 86 to 1

7 Continue daily deposits of heparin as indicated by bedside estimations of coagulation time (p 4572) until patient is completely ambulant and well on in convalescence

Immediate Care

1 Consider complication of phlebothrombosis in each patient who presents local or systemic predispositions to intravascular clotting the more particularly if exposed to protracted illness or surgical procedures known to contribute to the phenomenon of intravascular clotting (p 4571)

2 Do not delay diagnosis of intravascular thrombosis until classical signs of thrombophlebitis make their appearance There may be exten

Continuing Care (Unfavorable Course)

1 With increasing phlebothrombosis extension involvement of new vessels or embolization ask for consultation with a surgeon for discussion of operative intervention

2 If surgical procedure is advised discontinue heparin and nullify its anticoagulant effect by intravenous introduction of whole blood or of 2% protamine (p 4204)

3 If vessel ligation is to be done insist on bilateral ligations of femoral veins and all branches Remember that phlebothrombosis is rarely if ever a limited pathologic process and that more than half of the patients reveal extension above Poupart's ligament

4 At operation favor manual or suction removal of clot from above central ligated segment In pelvic processes (as seen following pregnancy hysterectomy prostatectomy and appendicectomy) discuss ligation of inferior vena cava

5 Following operation resume procedures indicated under Immediate Care (p 4576)

6 In convalescence insist on adherence to prophylactic regimen in order to prevent recurrence

SURGERY OF THROMBO EMBOLIC DISTURBANCES

Surgical procedures of supplementary value in the treatment of thrombo embolic disease include lumbar sympathetic blocks for processes involving the lower extremities stellate sympathetic block for thromboses of the cerebrum or upper extremities venous ligations or interruptions where the thrombotic process appears sharply localized thrombectomy and embolectomy

Lumbar Sympathetic Block

Many symptoms and signs of thrombophlebitis are due to vasospasm of arterial and venous systems secondary to vasoconstricting impulses originating in the thrombophlebotic segment As the result of vasospasm there result increased filtration pressure relative anoxia of the capillary endothelium and diminution in the flow of lymph all of which increase the amount of perivascular fluid as manifested clinically by edema By interruption of vasoconstrictor impulses with procaine hydrochloride infiltration of sympathetic ganglions reestablishment of the normal exchange of intravascular and perivascular fluids is accomplished

The technic of lumbar sympathetic block is within the technical range of any physician capable of performing lumbar puncture Successfully accomplished procaine block promptly relieves pain reduces fever and results in dissipation of edema within a few days Required technical steps are as follows

- (a) If anticoagulant drug has not yet been administered withhold for a few hours after the technical procedure has been accomplished

therapy preferably in a tent whether or not there are menacing systemic symptoms such as cyanosis, air hunger, tachypnea, tachycardia, pallor, diaphoresis and other evidences of forward failure (p 920). Free oxygenation may be depended on to diminish sludge formation and to lessen tissue damage in infarcted areas.

14 During critical first few hours and days give little heed to fluid and food requirements. Permit patient to drink and swallow soft foods according to whim.

15 If analgesics do not provide sufficient sedation and hypnosis additionally order oral barbiturates. Prescribe 30 mg of phenobarbital every three or four hours during the day and 90 to 180 mg of sodium secobarbital or any one of its substitutes at bedtime together with a warm drink.

16 For protection of patient and your own reputation maintain a constant vigil as unobtrusively as possible. Try to prevent other visits to the patient. Do not be overzealous in physical examinations. Limit surveys to what can be learned without turning the patient or sitting him up.

17 Unless especially trained and equipped with unusual facilities avoid use of Dicumarol as an anticoagulant (p 4203).

Continuing Care (Favorable Course)

1 Make daily estimates of blood coagulation time (p 4572).

2 Depending on bedside test decide upon deposits of heparin. Try to keep coagulation time between twenty and thirty minutes by use of 200 to 400 mg of heparin with or without vasoconstrictor deposited at 24, 36 or 48 hour intervals as indicated.

3 So long as patient is comfortable and contented maintain oxygen therapy.

4 When necessary empty lower bowel by a simple rectal flush. Do not permit patient to strain on bed pan.

5 At end of week resume normal diet if all is well.

6 After ten days to two weeks begin leg exercises by contraction of quadriceps and ventriflexion of feet against resistance.

7 Have patient measured for elastic stockings to extend from toes to mid thighs so that they may be ready when ambulation is resumed.

8 Sometime in the second or third week depending on circumstances, apply elastic bandages and permit dangling for five to ten minutes twice daily.

9 Increase activity to weight bearing permitting patient to stand on feet long enough to get out of bed and sit in a chair.

10 Permit daily trip to lavatory for evacuation.

11 Increase range of activity until patient has the privilege of walking around the room and then through corridors or rest of house.

12 After three weeks if all is well reduce numbers of heparin injections to twice weekly. Continue maintenance doses for another two or three weeks as indicated.

13 Warn patient of possible recurrence. Institute prophylactic procedures previously described (p 4575).

Vessel Ligation

If intravascular thrombosis were a purely localized process surgical therapy by ligation or interruption of the involved vessel would rapidly provide satisfactory surgical control. Unfortunately for an easy solution to a hazardous problem intravascular thrombosis is rarely an isolated pathologic lesion. To be sure the leg vessels and most particularly those of the calf are involved in the vast majority of phlebotrombotic disturbances. Nevertheless, extensive studies reveal that thrombotic occlusion extends above the level of Poupart's ligament in more than 50% of instances and as a result surgeons have successively recommended local excision, saphenous ligation, unilateral femoral ligation, bilateral femoral ligation and finally ligation of the inferior vena cava.

Greater assurance with heparin anticoagulant therapy and misgivings concerning surgical procedures in patients who are often desperate risks have diminished enthusiasm for operative interference in most quarters. We are included in the lists of those who currently oppose surgical interference for intravascular thrombosis except where indications are unusual (sharply localized vessel involvement, failure of anticoagulant therapy and/or repeated embolic phenomena).

Thrombectomy

Removal of intravascular thrombus central to the ligated or excised vessel (by forceps or by catheter suction) is a hazardous but necessary accompaniment of operative procedures involving thrombosed veins.

Embolectomy

Projection of the intravascular thrombus through the cardiac chambers and into lungs or cerebrum constitutes a dramatic emergency of clinical practice. In completely equipped institutions, teams organized for immediate removal of occluding thrombus function to save life at least or embolized tissue at the least. Inasmuch as the procedure must be carried out within a very few minutes of the accident the scope of the problem is far beyond the capacities of the general practitioner who should none the less have access to experts equipped for these potentially life saving procedures.

THROMBOSIS CEREBRAL

Practical Management

Prophylaxis

1. Observe prophylactic precautions pertinent to coronary thrombosis (p. 4583)

- (b) If anticoagulant drug is still effective inject antidotal protamine if heparin has been employed
- (c) Place patient in lateral recumbent position as for lumbar puncture (p 3782)
- (d) Mark upper levels of spinal processes of first four lumbar vertebrae
- (e) Mark points $2\frac{1}{2}$ finger breadths lateral to and horizontal with upper levels of these spinal processes. The respective transverse processes of these four lumbar vertebrae lie immediately beneath the lateral points
- (f) Insert lumbar puncture needles vertically through each lateral point previously marked. When needle is felt to impinge on the transverse process change direction slightly so that tip is directed beneath the transverse process and medially to approach anterolateral surface of body of vertebra where the sympathetic chain lies
- (g) When position of the needle has been changed carefully and slowly insert an additional $2\frac{1}{2}$ finger breadths
- (h) Aspirate frequently to ascertain that needle tip is not within lumen of any vascular structure
- (i) Slowly inject 5 cc of 1% procaine
- (j) Repeat procaine injections in each of other four lumbar sympathetic ganglia
- (k) Repeat after twenty four to forty eight hours if necessary

Stellate Ganglion Block

- 1 Place pillow under shoulders of the supine patient and turn head to side opposite from site of proposed injection
- 2 Palpate transverse processes of lower cervical vertebrae
- 3 Place skin wheal over sixth transverse process palpable even in patients with thick short necks. This point is approximately one finger breadth superior to sternoclavicular articulation
- 4 With free hand displace the sternocleidomastoid muscle slightly medially to preclude piercing with needle
- 5 Insert a 22-gauge 4 inch needle through skin wheal in line with sternoclavicular articulation
- 6 Direct needle posteriorly toward plane through spine of seventh cervical vertebra until bone contact is made
- 7 Withdraw needle 1 mm. Aspirate to ascertain that lumen of vessel has not inadvertently been entered
- 8 Slowly inject 2 cc of 1 to 2% procaine hydrochloride aspirating repeatedly during procedure to preclude possibility of false entry into vessel spinal canal or pulmonary tissue
- 9 Look for evidences of Horner's syndrome (ipsilateral ptosis and pupillary miosis). If the syndrome does not develop within a few moments inject another 3 cc. If still unsuccessful conclude that the ganglion has not been injected and preferably seek assistance of consulting anesthesiologist

50% glucose or sucrose (Sorbitol) in amounts varying from 20 to 100 cc

10 Venesection once widely utilized is of no value unless to combat polycythemia or congestive heart failure

11 Rehabilitation of the hemiplegic requires the urgent attention of the practitioner. Begin active therapy as soon as patient regains consciousness. In the early stages of treatment start the following procedures to prevent deformity

- (a) Arrange foot board or posterior leg plint to prevent foot drop
- (b) Use sandbags to combat outward rotation of affected leg
- (c) Place pillow in axilla to counteract adduction of shoulder
- (d) Institute quadriceps exercises to maintain muscle strength

12 Attach a pulley to a gooseneck pipe over head of bed using an ordinary clothesline rope with a 1 inch webbing for the hand loop. Teach stretching and passive pulley exercises to increase range of motion of shoulder and elbow and prevent adhesions

13 Start speech therapy as soon as pulley exercises have gotten under way

14 Inaugurate retraining in ambulation. Start by practice of balance in the standing position and progress to parallel bars. Teach heel and toe gait stressing reciprocal motion to minimize clonus and reestablish normal walking habits. Use a short leg brace to correct foot drop. If parallel bars are not available substitute two kitchen chairs

15 Teach crutch walking, starting with alternate 4 point gait and stressing climbing of steps, curbs, stairs and ramps. Concurrently retrain in activities of self care and daily living such as use of knife and fork, buttoning clothes, etc.

THROMBOSIS, CORONARY

[Coronary Occlusion]

Practical Management

Prophylaxis

1 Currently coronary thrombosis is a major cause for incapacitation and death in middle and old age groups. Increasingly coronary thrombosis is recognized as a cause for sudden exodus in young men as revealed by an incidence of 300 in a group of 800 non accidental non combat deaths in apparently healthy oldiers

2 As in the case of phlebothrombosis there exist constitutional and acquired predispositions to the process of intravascular clotting

3 In his routine survey of the office population the seasoned practitioner devises methods of preventing or delaying coronary thrombosis in likely candidates particularly males

4 More specifically he advises weight reduction (p 669) correction of hypothyroidism by administration of thyroid extract (p 1189)

Immediate Care

1 Cerebral thrombosis more frequently encountered than cerebral hemorrhage is characterized by its ingravescent onset. Small and even larger thrombi in silent areas most often produce transitory and seemingly minor clinical manifestations in contradistinction to the classical stroke or shock. The small signs of ingravescent cerebral thrombosis include amnesia, aphasia, muscle weakness, vertigo, dis-equilibration, ataxia, awkwardness, slow cerebration, stumbling, somnolence or restlessness alone or in combination and of transitory or longer duration.

2 The seasoned practitioner who lives his life with his patient recognizes these changes though there are no demonstrable deviations in the neurologic physical examination.

3 Satisfied that the patient is suffering an ingravescent cerebral thrombosis, deposits of heparin as previously described are warranted (p 4203).

4 In general the patient is then cared for in the manner of those who suffer coronary thrombosis except that oxygen therapy is not so urgently required.

5 In the event that the patient suffers the characteristic hemiplegia, blockade of stellate ganglion with procaine is distinctly indicated in the manner of lumbar block in phlebothrombosis.

6 To practice stellate ganglion injection, place patient supine with pillow beneath the shoulders and head turned to side opposite from site of injection. Palpate transverse processes of lower cervical vertebrae. Place skin wheel over sixth transverse process which corresponds approximately to a spot 2 cm (one finger breadth) above sternoclavicular articulation. With free hand displace sternocleidomastoid muscle slightly medially to preclude piercing with needle. Using a 4 inch (10 cm) 22 gauge needle penetrate wheel until contact is made with tip of transverse process. Then guide needle tip along anterosuperior surface of transverse process until it reaches body of vertebra. Slightly withdraw needle and aspirate to be sure that neither vessel lumen, spinal canal nor air containing pulmonary tissues have been pierced. Slowly inject 2 cc of 1 to 2% procaine. With needle in situ wait five to ten minutes looking for evidences of Horner's syndrome (ipsilateral ptosis and pupillary miosis). If these signs fail to appear inject an additional 3 to 5 cc slightly moving tip of needle.

7 If stellate ganglion injection is unsuccessful by method above described, summon consultant anesthesiologist.

8 Because of the semi-conscious or comatose condition of the patient who has had a cerebral accident, it is necessary to protect with anti-infective agents. For this purpose despite its tendency to favor increased coagulability of blood, deposit 300,000 to 600,000 units of procaine penicillin G in aqueous suspension or oil repeating after twelve to twenty four hours if necessary.

9 Intravenous injection of hypertonic solutions for reduction of intracranial pressure is worthy of consideration. For this purpose use

- 13 Particularly avoid digitalization unless there are definitive evidences of backward failure
- 14 Avoid antibiotics especially penicillin and aureomycin unless there are definitive evidences of superimposed infection Each of these antibiotics tends to increase blood coagulability
- 15 Avoid sudden changes in blood pressure induced by overzealous injection of adrenergics Rely on vasoconstrictor incorporated in heparin product for more sustained effects
- 16 Unless especially trained and equipped with unusual facilities avoid use of Dicumarol as an anticoagulant (p 4202)

Continuing Care (Favorable Course)

- 1 Continue oxygen therapy for at least a week or ten days even if all is well
- 2 Sedate during day with phenobarbital 15 to 30 mg ($\frac{1}{4}$ - $\frac{1}{2}$ gr) every three or four hours as needed
- 3 Prescribe a hypnotic such as sodium secenal 90 mg ($1\frac{1}{2}$ gr) on retiring Repeat if necessary
- 4 With continued or recurrent pain inject subcutaneously 100 mg of demerol or 5 mg of dolophine Reserve intravenous injection of 2 mg ($\frac{1}{32}$ gr) of dilaudid for sustained or severe discomfort
- 5 Take bedside coagulation time each day Deposit heparin as needed (p 4203) Precede heparin injection with subcutaneous demerol or dolophine if patient is apprehensive or suffers during introduction of anticoagulant Leave orders for repetition of analgesic if heparin reaction occurs after deposit
- 6 Make no attempt to maintain fluid or food intake Unless patient is thirsty or hungry permit almost complete hibernation If patient requests food or drink give whatever is requested within reason but avoid iced or carbonated drinks or fruit juices which may produce distention
- 7 Unless patient is distended or uncomfortable ignore constipation If there is discomfort turn on left side and have an experienced nurse give a low rectal flush or irrigation
- 8 Repeat electrocardiographic trace once or twice weekly
- 9 Do not be disturbed by transitory temperature elevations which may be aseptic as the result of infarction itself or of introduction of heparin
- 10 After ten days to three weeks depending on estimated extent of myocardial infarction and patient's response to therapy consider initiation of convalescence Encourage ventriflexion of feet and contraction of quadriceps to maintain muscle tone and prevent phlebotrombosis Continuing heparinization bandage legs and permit dangling at side of bed
- 11 If minor activity is favorably received permit weight bearing so that patient may sit at side of bed Later suggest a trip to lavatory for purposes of evacuation
- 12 After three to six weeks if all is well reduce heparin injections

control of diabetes mellitus (p 1252) reduction or preferably elimination of use of tobacco (p 3884) maintenance of good muscular tone by non competitive exercise (p 3756) maintenance of a normal blood pressure (p 4360) and lessening of tensions and strains of every-day existence (p 3473)

5 By insistence on routine annual electrocardiographic tracings and teleo roentgenograms after age of 35 the diagnosis of closure of small coronary twigs is greatly facilitated permitting intensive therapy when seemingly minor deviations are reported

Immediate Care

1 Do not await classical clinical manifestations of coronary thrombosis before making diagnosis and instituting therapy (p 983) Obtain serial electrocardiograms for comparison with office records when ever patient complains of even minor degrees of precordial oppression or pain discomfort radiating up toward neck or down arms and other wise inexplicable evidences of forward failure particularly faintness dizziness an all-gone feeling profuse perspiration etc

2 Do not lightly dismiss attacks as mere coronary insufficiencies (p 896) Remember that coronary insufficiency also is a manifestation of organic coronary closure (EKG 6-14 pp 814-818)

3 Even on suspicion of diagnosis immobilize completely at home if facilities are adequate Preferably avoid hospitalization which requires transportation and strain and involves additional expense

4 Inject intravenously 2 mg (1/32 gr) of dilaudid if pain and distress are great Otherwise give subcutaneously 100 mg of demerol or 5 mg of dolophine

5 Insist on oxygen therapy even in mildest occlusions Use a mask if necessary but preferably obtain a tent

6 Limit examinations to cardiac auscultation notation of blood pressure electrocardiographic trace and estimation of blood coagulation time by Lee White Howell bedside method (p 4572)

7 On basis of estimated weight and calculated coagulation time deposit heparin even in seemingly mild occlusions (p 4203) Inject subfascially 200 to 300 mg in lighter patients and 300 to 400 mg in those who weigh more than 150 lbs Unless patient is hypertensive give at least half the dose with vasoconstrictor (p 4203)

8 Caution patient of possible local reaction to heparin Leave orders for repetition of analgesic as needed

9 Despite therapeutic reassurance to the patient do not delude yourself that there is any such thing as a minor coronary thrombosis

10 Maintain a constant vigil unobtrusively and demand professional nursing care if possible

11 Ignore fluid and food requirements Once patient has been sedated heparin has been deposited and oxygen therapy instituted practice skillful neglect

12 In the presence of any cardiac irregularity consider oral administration of 0.3 gm (5 gr) of quinidine sulfate every three or four hours until sinus rhythm has been restored for at least two or three days

Therapeutics

In uncinariasis (p 1903) after failure of tetrachlorethylene and hexylre orcinol thymol may be tried with caution The evening preceding treatment ■ saline purge is given On the morning of treatment 3 capsules (900 mg) are given at hourly intervals for three doses to total 2.7 gm A saline purge is given after the last dose

Treatment may be repeated after a week and if there has been no toxicity the dose may be increased to 4 capsules (1200 mg) repeated three times at hourly intervals to total 3.6 gm

Toxicity

Nausea vomiting diarrhea convulsions respiratory and circulatory depression (p 1897)

TICK BITE FEVER

Principles of Diagnosis and Therapy

1 In addition to acting as vectors in infectious diseases (Table 2 ■ 42) ticks secrete a toxin which may produce fever and paralysis in the host (p 41)

2 Removal of the tick eliminates symptoms

3 Because of their potential transmission of rickettsial diseases (Rocky Mountain spotted fever) bacterial invasions (tularemia) and spirochetes (relapsing fever) prophylactic antibiotic therapy merits consideration in the tick infected Aureomycin and/or chloramphenicol are specific in rickettsiemias and gram negative bacillary infections but penicillin is most effective against *Borrelia recurrentis* The combination of ■ single depot of 600 000 units of procaine penicillin G in oil with 2% aluminum monostearate and of 3 gm orally of aureomycin or chloramphenicol daily for three days may be expected to prevent or abort all invasions transmitted by the tick

TORULOSIS

[Cryptococcosis]

Principles of Diagnosis and Therapy

1 Torulosis is ■ yeast invasion with selective localization in the central nervous system (p 442) and lungs (Fig 79 p 497)

2 The diagnosis ■ made by demonstrating organisms in cerebrospinal fluid or sputum

3 Successful treatment has been reported with sulfadiazine Other investigators found no inhibition with various sulfonamides as well as streptomycin and penicillin but noted an inhibitory effect with gentian violet

to twice weekly for perhaps another month. Permit patient to walk about room and later through house or corridors.

13 In convalescence discuss prophylactic measures emphasizing that recurrences of coronary thrombosis are the rule rather than the exception. Temper this gloomy prospect by assurance that strict adherence to preventive measures offers high promise for restitution to normal within limits.

Continuing Care (Unfavorable Course)

1 With recurrence of thrombosis or evidences of extension make no significant changes in previously outlined regimen. Check to be sure that sufficient heparin has been administered to raise coagulation time beyond thirty minutes; increase oxygen concentrations within tent.

2 With manifestations of backward failure particularly pulmonary edema inject a mercurial diuretic preferably thimerin in the dose of 1 to 2 cc subcutaneously. Do not give mercurial intravenously!

3 If cardiac irregularity appears to contribute to backward failure attempt to restore sinus rhythm with quinidine sulfate 0.3 to 0.6 (5 to 10 grains) every three or four hours as tolerated.

4 Try to withhold digitalization until effects of the mercurial diuretic and quinidine have been observed. Try to limit use of digitalis to those patients with backward failure and auricular fibrillation. Unless symptoms are of great urgency avoid parenteral injection if possible. Slowly digitalize with moderate doses such as 0.6 gm (10 grain) of the leaf on first and second days, 0.3 gm (5 grain) on third and fourth days and 0.1 gm (1½ grain) thereafter for maintenance (p. 859). In the rare instance where rapid digitalization is required dilute 0.5 mg (1/120 gr) of digoxin with 10 cc of saline and slowly inject intravenously.

5 If complicating disturbance is a cerebral embolization manage as outlined.

6 Reduce tempo of convalescence considerably as compared to uncomplicated coronary occlusion. Maintain bed rest for six weeks to three months. Do not permit any significant return to activity for a minimum period of one year, observing all prophylactic precautions previously outlined (p. 4583).

THYMOL

Thymol is a phenol previously used as an anthelmintic in uncinariasis (p. 1903). Because of its toxicity (p. 1897) it has yielded preference to tetrachlorethylene, hexylresorcinol and carbon tetrachloride.

Available Product

Thymol U.S.P. Gelatin Capsules 300 mg

Occasionally the organism is recovered from blood bone marrow cerebrospinal fluid or sputum

9 The following classification is suggested by Frankel (JAMA 140 374 1949)

- A *Acute Toxoplasmosis* Generalized irrespective of age or mode of infection involving all viscera including central nervous system diagnosed by demonstration of organisms and by rise in complement fixation and neutralizing antibody titers
- B *Subacute Toxoplasmosis* Depending on persistence and proliferation of toxoplasma in the central nervous system including the eye subidence of other visceral lesions due to antibody formation zone of antigen antibody reaction surrounding ventricles diagnosed by isolation of toxoplasma antigenic test with ventricular fluid and by rises in neutralizing antibody and complement fixation titers
- C *Chronic Toxoplasmosis* Depending on persistence of toxoplasma pseudocysts in the central nervous system eye and myocardium diagnosed clinically by immunologic and serologic tests

10 Sulfapyridine sulfamerazine and sulfadiazine have been tried with beneficial results

11 Tried but found wanting were trypanflavine rivanol potassium antimony tartrate mapharsen quinine streptomycin penicillin chloroquine aureomycin polymyxin chlorquanide subtilin bacitracin paminobenzoic acid nicotinic acid and nitrofurazone

12 Untried but worthy of trial are suramin sodium thio arsenites chloroquine and p arseno cphenylbutyric acid

13 Because many manifestations of chronic toxoplasmosis suggest hypersensitization Frankel attempted desensitization by graded increasing doses of toxoplasma antigen (University of California Medical School San Francisco (22) Calif) supplemented by nonspecific therapy with intravenous typhoid vaccine in some instances

TRACHOMA

Principles of Diagnosis and Therapy

1 Few non fatal diseases have caused the amount of suffering and disability inflicted by trachoma (p 1625)

2 Despite its high prevalence along the eastern Mediterranean trachoma also occurs in the United States in a zone that reaches from the Alleghenies to Kansas and Oklahoma and includes eastern Kentucky Tennessee Virginia West Virginia southern Illinois southern Indiana and the Carolinas It is estimated that 10 per cent of American Indians have trachoma easily recognized by clinical observation (Fig 321 p 1625)

3 Although trachoma is caused by a virus it responds to sulfonamides and penicillin both of which will probably be replaced by

4 Trials with antimalarials (chloroquine and chloroquine) and protozoals (suramin sodium and parvosphen/ibutyric acid) and amebicides (thioarsenites) merit consideration in view of lack of enthusiasm for other ant infectives

TOXOPLASMOSIS

Principles of Diagnosis and Therapy

1 Toxoplasmas are generally regarded as protozoan parasites although their exact classification is not yet definitely determined

2 Dogs cats rats sheep guinea pigs and many birds are natural hosts for toxoplasma in the U S

3 In fresh preparations toxoplasmas appear as distinct sharply outlined crescentric organisms measuring 4 to 7 microns in length and 2 to 4 microns in width The cytoplasm is clear and there is well defined nuclear chromatin In Wright stain the cytoplasm is pale blue while the chromatin is dark red to purple Toxoplasmas have an affinity for fixed cells particularly those of the reticulo endothelial system

5 The disease is most often seen in infants the infection occurring at birth or shortly thereafter (p 535)

6 Essential clinical findings are neurologic as tabulated below

| | Present % |
|------------------------|-----------|
| Internal hydrocephalus | 80 |
| Muscular twitching | 71 |
| Convulsions | 67 |
| Spas ticity | 54 |
| Opisthotonos | 45 |
| Retraction of head | 36 |
| Stiff neck | 22 |
| Paralysis | 18 |
| Xanthochromia | 05 |

7 Extraneurologic manifestations as noted in eighteen patients included the following

| | Present % |
|------------------------------|-----------|
| Splenomegaly | 50 |
| Hepatomegaly | 64 |
| Jaundice | 42 |
| Purpuric spots | 33 |
| Feeding difficulty | 64 |
| Diarrhea | 31 |
| Vomiting | 43 |
| Upper respiratory infections | 45 |
| Pulmonary signs | 73 |
| Fever | 60 |
| Subnormal temperature | 54 |

8 The diagnosis of toxoplasmosis is made by demonstration of neutralizing antibody and by finding invading organisms in tissue slides

the relapsing fevers (*Bo recurrentis*) spirochetal jaundice (*Leptospira icterohemorrhagica*) and rat bite fever (*Spirillum minus*)

The treponematoses all yield to penicillin though the responses are variable. Additionally aureomycin and chloramphenicol have the penemicidal capacity. These newer and less toxic antibiotics may replace organic trivalent arsenicals as products of second choice to penicillin.

TRICHINOSIS

General Principles of Diagnosis and Treatment

1 Like filariasis and allied disorders (p 4327) trichinosis represents a systemic helminthic infection (p 539)

2 The diagnosis is established by demonstration of ova in urine or stools (Fig 90 p 540) and by demonstration of skin sensitivity to trichinella extract (Fig 91 p 541)

3 Until recently therapy has been completely discouraging. With successful treatment of filariasis using hetrazan encouraging results have also been reported with this new drug in trichinosis.

4 Effective doses of hetrazan are accomplished by giving a single 50 mg tablet thrice daily for at least three weeks. As in filariasis it is suggested that antihistamine be administered concurrently as 200 mg of pyribenzamine or benadryl each day.

5 The toxic symptoms of hetrazan are negligible and include only slight headache, malaise, nausea, vomiting and an occasional toxicoderm. Treatment may be repeated after a holiday of ten days to two weeks.

TRICHOMONAS ENTEROCOLITIS

General Principles of Diagnosis and Therapy

1 *Trichomonas enterocolitis* is recognized by the presence of *Trichomonas hominis* in feces (Fig 651 p 2596)

2 If the patient gives a history of recurring diarrhea possibly related to the presence of *Trichomonas* institute therapy with trichomonicide (p 4592) preferably carbarsone. Order tablets of 250 mg twice daily for ten days. At the end of this time reexamine stools. If organisms persist repeat therapy after a rest period of ten days to two weeks.

3 In the instance of arsenic resistant *Trichomonas enterocolitis* suggest a course of aureomycin of 50 mg per kilogram of body weight (4 products four times daily for the average adult weighing 150 lbs.)

aureomycin which appears to be spectacularly specific (Braley and Sanders Ann New York Acad Sc 51 280 and J A M A 138 426 1948)

Practical Management

1 Into each eye instill 2 or 3 drops of aureomycin ophthalmic solution prepared by dissolving 25 mg in the diluent provided by the manufacturer

2 Into the lid margin rub aureomycin hydrochloride ophthalmic ointment

3 Because of the grave consequences of the disease supplement local with systemic aureomycin therapy Give a priming dose of 25 mg per kilogram of body weight (1 75 gm for average adult weighing 150 pounds) Maintain antibiotic levels with a daily dose equal to priming dose but divided into 4 equal portions given at 6 hour intervals To prevent gastric irritation wash antibiotic down with water fruit juice tea milk or ice cream Continue therapy for a minimum period of ten days to prevent chronic deformities resulting in impairment of vision (p 1626)

4 Despite their efficacy local and systemic soluble sulfonamides are now obsolete (Murray Canadian Med Assn J 60 574 1949) Similarly penicillin yields preference to aureomycin chloramphenicol Completely abandoned are drastic methods of local therapy including application of silver nitrate to the lids and cauterization with copper sulfate

TRENCH FEVER

[Wolhynian Fever His Werner Disease Five Day Fever Meuse Fever Shank Fever Shin Fever]

Principles of Diagnosis and Therapy

1 Trench fever is a specific benign rickettsemia that involved at least 1 000 000 soldiers in World War I The infection has no mortality

2 The specific invader is transmitted by pedicul

3 The diagnosis is made epidemiologically since the disease has no specific clinical features or laboratory findings (p 383)

4 Prophylaxis is accomplished by pediculocides (p 4446)

5 As in the case of other invasions of similar origin trench fever merits probatory antibiotic therapy with aureomycin chloramphenicol and/or para aminobenzoic acid as given in typhus (p 4621)

TREPONEMATOSES

[Spirochetoses]

The treponematoses include syphilis (*Tr pallidum*) frambesia (*Tr pertenue*) pinta (*Tr carateum*) fusospirochetosis (*Bo vincenti*)

5 Subject the sexual partner to local treatment if *Trichomonas* are demonstrable in prostate secretion urethra or under the prepuce. If the preputial cavity is accessible local therapy can be accomplished by retraction and painting with 1% gentian violet. Otherwise circumcision is suggested (p. 3936).

6 Gynecologic defects in the female require surgical correction, i.e., excision of Skene's or Bartholin glands or repair of cervix.

7 For home treatment the patient is required to take douches with products that have no potential for toxicity. Thus a solution of one half to two tumblerfuls of table salt dissolved in 2 quarts of water produces local conditions hostile to growth of *Trichomonas*. Similarly douches of 2 to 4 tablespoonfuls of white vinegar or of 1 to 4 teaspoonfuls of lactic acid U.S.P. (4 to 16 cc.) to 2 quarts of water produce an acid vaginal secretion unpalatable to *Trichomonas*. Douches are best taken in the morning and again on retiring.

8 For self-medication patients insert preparations of minimum toxic potential. Thus initial trial is suggested with aci-gel, marketed with a convenient vaginal dispenser, allantoin cream or oxyquinoline preparation such as vioform or floraquin. The two last are supplied as vaginal tablets inserted one in the anterior and one in the posterior fornix twice daily for a period of at least six weeks including the time of menstrual flow. Vaginal suppositories of ceepryn (1:1000) also are available and may be given safely for self-medication.

9 In resistant *Trichomonas* infection resort to arsenicals such as vaginal suppositories of carbarsone.

10 In addition to self-treatment the patient reports to the office for insufflations particularly during the menstrual flow. The physician has choice of oxyquinoline derivative such as vioform, preparations of picric acid such as 1% silver picrate or arsenicals such as acetarsone or devegan. Each of these preparations is supplied in vaginal powder for insufflation to be used after thorough cleansing of the vaginal cavity and scrubbing of folds with green soap using cotton on a dressing forceps.

11 The patient is warned of possible recurrence particularly after the menstrual flow. She is cautioned to continue home treatment after each period and return for office examination and treatment if necessary at least monthly for several months.

TRICHURIASIS

[Whipworm Infestation]

Principles of Diagnosis and Therapy

1 The diagnosis of trichuriasis is dependent on recognition of ova in stools (Fig. 1099, p. 3730).

2 Infestations are limited to local manifestations. Systemic invasion does not occur.

TRICHOMONICIDES

| Product | Comment |
|--------------------------|--|
| Acetar one N F (Abbott) | Pentavalent arsenical available in 12.5% powder for insufflation. Prefer potentially less toxic products. |
| Acjel (Ortho) | Jelly buffered to pH 4.0. Marketed with intravaginal applicator. Non toxic and acceptable for trial. |
| Allanton (National) | In 2% ointment or vaginal cream. Merits trial. |
| Arsenicals | Pentavalent acetarsone, aldarsone, carbarsone, devegan and phenarsone are available. Prefer potentially less toxic products. |
| Carbarsone U S P (Lilly) | Pentavalent arsenical available in vaginal suppositories containing 0.13 gm. or in powder. Prefer potentially less toxic products. |
| Ceepryn (Merrell) | Quaternary ammonium salt available as 0.5% powder or 1:1000 vaginal suppository. Non toxic and merits trial. |
| Devegan (Winthrop) | Arsenic acid derivative available in tablets or powder. Prefer potentially less toxic products. |
| Floraquin (Searle) | An oxyquinoline derivative available in powder or tablets for intravaginal insertion. Non toxic and merits trial. |
| Lactic Acid U S P | For producing an acid vaginal flora. Use as douche beginning with 4 cc (1 teaspoonful) to two quarts of water. Increase gradually to 16 cc (4 teaspoonfuls). |
| Picragol (Wyeth) | Silver picrate in 1% powder. Prefer less irritating products which do not sting. |
| Salt | Add a tumblerful of table salt to two quarts of water. Increase to two tumblerfuls if tolerated. |
| Stovarsol (Merck) | See acetarsone. |
| Vinegar | To lower acidity of vaginal flora. Start with two to four tablespoonfuls of white vinegar per two quarts of water. Increase strength as tolerated. |
| Vioform N N R (Ciba) | An oxyquinoline derivative available in vaginal inserts or powder for insufflation. Merits trial. |

TRICHOMONAS VAGINITIS

General Principles of Diagnosis and Therapy

1 *Trichomonas vaginitis* (p 2598) is very common in office practice. The diagnosis is established by identification of unstained protozoans under the microscope in fresh preparations obtained through a vaginoscope that has not been lubricated (Figs 651-654 p 2596).

2 The many effectual trichomonicides are listed in the accompanying chart (p 4592).

3 Preliminary to specific therapy examine patient and sexual partner. Nests of the protozoan may be found in cervix, Skene's glands, Bartholin glands, urethra, prepuce, prostate, anus and rectum. As in the diagnosis of vaginitis, identification of *Trichomonas* is easily accomplished by making a fresh saline spread of feces and examining immediately under the microscope.

4 Whether or not the patient has demonstrable trichomonas in the stool, she is instructed concerning rectal hygiene. The anus must be wiped from before backward and not forward soiling vagina with fecal content.

TRYPANOCIDES

| Preparation | Comment |
|--|--|
| Acriflavin | Obsolete coal tar derivative |
| Antrycide (M 7555) | A British synthetic product under experimental investigation Not commercially available (p 4227) |
| Atoxyl | Obsolete toxic arsenical |
| Bayer 7602 | Superseded by uramin for its lesser toxicity Used intramuscularly in doses of 5-20 cc of 3% solution to total 200-250 cc for average sized adult with Chagas disease |
| Neocryl | A trivalent proprietary arsenical not available in America Used in weekly doses of 2-4 gm |
| p Arsenosphenylbutyric Acid | An arsenical currently used experimentally by the United States Public Health Service (p 4233) |
| Stilbamidine | An aromatic diamidine of antimony (p 4225) under experimental investigation but certainly much more toxic than suramin |
| Suramin Sodium U S P (Acritytol Bayer 205 Fournieu, 309 Ger manin) Naphuride Urea) | A urea derivative that is highly efficacious and only mildly toxic commercially available currently the preparation of choice (p 4553) |
| Trypallavin | An active flavin derivative introduced by Ehrlich Not very efficacious superseded by suramin |
| Tryparsamide (Fournieu 270) Urea | A pentavalent organic arsenical highly toxic and by no means as effectual as formerly believed Now obsolescent See uramin |

Immediate Care

- 1 Inaugurate measures used for control of infectious disease (p 68)
- 2 Inject intravenously 10 cc of a freshly prepared 10% solution of sodium suramin made by dissolving contents of ampul containing 1 gm of naphuride sodium (Winthrop) in sterile distilled water or physiologic saline Sprinkle powder on surface of diluent to prevent clumping (p 4553)

Continuing Care (Unfavorable Course)

- 1 Request the United States Public Health Service to furnish p arsenosphenylbutyric acid Supplement suramin with a course of 12 to 14 daily injections The preparation is non toxic and is trypanosomicidal
- 2 If p arsenosphenylbutyric acid is not obtainable supplement suramin sodium with tryparsamide (Fournieu 270) particularly with signs of invasion of the nervous system Give probatory intravenous injection of 0.5 gm dissolved in sterile distilled water If tolerated give 3 gm once or twice weekly for twelve weeks Discontinue immediately if any toxicity appears (agranulocytosis leukopenia amblyopia contraction of visual or color fields blurring of vision photophobia or lacrimation) Start antidotal treatment with BAL (p 4251)

Continuing Care (Progressively Unfavorable Course)

- 1 Suramin and arsenicals failing try antimony using pentamidine (M & B 800) if available Inject 100 mg dissolved in 10 cc of distilled water daily for twelve days

3 Treatment is conducted as for ascariasis. For immediate care use suggestions incorporated in paragraphs 2, 3 and 4 (p. 4240).

4 For continuing care of unfavorable course follow suggestions of paragraphs 2 and 3 of resistant infestation with ascaris (p. 4240).

TRYPANOSOMIASIS

[African Sleeping Sickness South American Sleeping Sickness
Chagas Disease Nagana]

Principles of Diagnosis and Treatment

1 Trypanosomiasis is a protozoal infestation transmitted to man by the tsetse fly (Fig. 88, p. 532).

2 Clinical subvarieties of trypanosomiasis are recognized in tropical Africa (Gambian), Rhodesia (Rhodesian) and South America (Chagas disease) (pp. 531-532).

3 Of the subgroups Chagas disease is most resistant to therapy. In its chronic form it is prone to produce cardiac manifestations.

4 Modern medicine has now effectual tools for prevention and possible cure.

5 The problem of trypanocides has broad political implications in addition to its obvious medical importance. Conquest of the continent of Africa is more or less dependent upon control of trypanosomiasis in man and in animals. For this reason, as indicated by the complicated nomenclature, English, French, and German investigators have experimented with secret formulas to the confusion of all genuinely interested in conquest of the microbial invader. Much of the credit for present simplification is due to Eagle and his associates in the United States Public Health Service who have prepared suramin sodium as well as p-arsenosphenylbutyric acid.

Practical Management

Prophylaxis

1 Clear milewide strips of jungle to prevent migration of flies which cannot travel more than a few hundred feet without resting.

2 Sacrifice infected wild animals.

3 Treat domestic animals with antitrypanicide (p. 4227).

4 Use insect repellents especially at mid-day when flies bite.

5 Inject 1 gm. of sodium suramin as for active therapy. Repeat in one week and again every three months. Naphuride has only minor and transitory toxicity including edema, toxicodermis, pruritus, conjunctivitis, stomatitis and peripheral neuritis.

Continuing Care (Favorable Course)

- 1 Maintain antibiotic level by repeating the priming dose over a 24 hour period using four equal doses i.e. 4 products every six hours
- 2 Continue antibiotics for at least two days after defervescence

Continuing Care (Unfavorable Course)

- 1 If symptoms continue and product is well tolerated double amount of each dose and reduce time intervals to three hours
- 2 If symptoms continue and antibiotic is not tolerated substitute the other i.e. if patient is nauseated by aureomycin switch to chloramphenicol or vice versa
- 3 If neither product is tolerated use para aminobenzoic acid Give a priming dose of 8 gm of PABA (16 tablets of 0.5 gm each) with bicarbonate of soda Order maintenance doses of 3 gm every two hours until patient has been afebrile for two days

Continuing Care (Progressively Unfavorable Course)

- 1 Combine aureomycin and/or chloramphenicol in a total daily dose of 8 gm with PABA in a total daily dose of 36 gm
- 2 If there is gastric intolerance insert a duodenal tube and give antibiotics transduodenally
- 3 With continued distress set up an intravenous drip For priming dose introduce 500 mg of aureomycin hydrochloride and alternate with 120 cc of 5% sodium PABA in physiologic saline
- 4 Watch the blood count Introduce 500 cc of whole blood for anemia stop PABA if leukopenic give two units of plasma for toxemia or prostration
- 5 Prepare for long convalescence
- 6 Obsolete cent useless or detrimental are nitroacridine 3582 rutenol sulfonamides penicillin and digitalis

TUBERCULOSIS**General Principles of Diagnosis**

- 1 Despite a reduction of 72 per cent in mortality there were approximately 50 000 deaths from tuberculosis in the United States in 1947 The total population of the tuberculous is estimated in excess of 500 000
- 2 Tuberculosis does not recognize social or economic strata While the large numbers of the tubercular admittedly are found where there is poor housing undernutrition and crowding the disease may manifest itself among the comfortably housed well fed and socially privileged
- 3 In routine examination of the office population include a survey for tuberculosis make inquiries concerning familial or occupational

2 Try Bayer 7602 presently of unknown composition Inject intra muscularly 5 to 20cc of 3% solution to total 200 to 250 cc for adult weighing 150 pounds

3 Try neocryl using weekly doses of 2 to 4 gm

4 Atoxyl (Sodium arsenite) acriflavin tryptoflavin tartar emelic and antimony trioxide are regarded as obsolete because of relatively feeble trypanocidal action compared with toxic potential

TSUTSUGAMUSHI FEVER

[Japanese Piver Fever kedani Malaya Typhus Mite borne Typhu Rural Typhus Scrub Typhus Tropical Typhus]

Principles of Diagnosis and Therapy

1 Tsutsugamushi fever is a rickettsemia transmitted by mites and chiggers A primary lesion usually develops at site of inoculum (Fig 59 p 382) After an incubation period of four to twenty-one days systemic manifestations appear characterized by fever lymphadenopathy and a maculopapular rash (p 381)

2 Tsutsugamushi fever can be prevented and specifically treated

Prophylaxis

1 Avoid bites of vectors by use of long trousers sleeves and tight collar.

2 Use insect repellent (p 4373) U S Army impregnates clothing with an emulsion containing 45 parts of benzyl benzoate 45 parts of dibutyl phthalate and 10 parts emulsifier (Scientific Monthly Nov 1943 p 288)

3 Inject specific vaccine for development of active immunity Give booster doses at least twice annually to those in exposed areas For initial inoculation introduce three 1 cc doses at weekly intervals The vaccine is not commercially available but may be obtained from the United States Public Health Service

Immediate Care

1 Inaugurate non-specific measures of treatment of generalized infection (p 68)

2 Para aminobenzoic acid aureomycin and chloramphenicol are specifics in scrub typhus Either of the latter two is preferred

3 With chloramphenicol or aureomycin order a loading dose of 50 to 100 mg per kilogram of body weight For the average adult weighing 150 pounds give four equal portions at hourly intervals each of 4 products (1 gm) with milk ice cream soup or cream cheese If either preparation is not tolerated 1 / the other

imilar pathologic inflammation. Those microbes which most frequently mimic tubercle bacilli are fungi, histoplasmas, toxoplasmas and helminths (p. 2210).

10. The tuberculin test is not oracular. It does not tell whether or not the patient is suffering from tuberculosis. It does not necessarily imply that the disease is active. Quite simply it denotes that a defensive mechanism has been set up by host tissues against the protein of the tubercle bacillus. The test may be positive when the disease is inactive and the patient is suffering from some quite different invasion. Contrariwise it may be negative in early stages of infection for it takes approximately a month to develop when artificially produced by BCG vaccine. On rare occasions it is negative in the presence of virulent tubercular infection when the patient is anergic or incapable of producing antibody as in fulminating miliary and meningeal involvements and in sarcoidosis.

11. Clinical and radiographic evidences of invasion by tubercle bacilli are not necessarily indicative of activity. Particularly in the case of chest radiographs and palpation of tuberculous nodes the physician merely recognizes scars of a previously active infection. Under these circumstances quite naturally the burden of proof is on the side of proving the innocence of the acid fast organism. But even the combination of a positive tuberculin reaction and a chest radiograph showing a tuberculous lesion is not sufficient to prove that given symptoms necessarily are tuberculous.

12. Demonstration of tubercle bacilli in sputum together with tuberculin positivity and demonstrable radiographic evidences of tuberculous infection also may not necessarily mean that the patient is suffering from tuberculosis. Chronic spitters are a very definite menace to the community at large and to their households and fellow workers in particular but they may have reached a stalemate with the invading microbe where they themselves no longer suffer significantly from tuberculosis despite the weight of positive evidence to the contrary.

13. When the proven tuberculous patient develops evidences of activity such as a rapid sedimentation rate and fever this too may not necessarily be due to tuberculosis. The patient may have a positive tuberculin reaction, a positive chest film, tubercle bacilli in the sputum, a rapid erythrocyte sedimentation rate and fever and still suffer from an unrelated superimposed infection.

14. The clinical manifestations of tuberculosis are tabulated in the accompanying chart. Note particularly under "Cutaneous Manifestations" that there is a clear differentiation between lesions due to direct implantation with tubercle bacilli (tuberculous diseases of the skin) and those due to hypersensitivity to the protein of tubercle bacilli (tuberculids). In the former acid fast bacilli are demonstrable though the search may be long and tedious; in the latter tubercle bacilli can not be demonstrated or even transmitted to experimental animals although the relationship of the given syndrome to the organism is clinically established beyond doubt.

exposure to acid fast infection note suspicious subjective complaints such as malaise failure to gain weight loss of weight (p 700) anorexia (p 1779) chronic cough (p 2050) or persistent expectoration look for physical signs of cutaneous lymphatic or pulmonary involvement perform a tuberculin skin test using intracutaneous method or Vollmer patch (Fig 35 p 264 and Fig 34 p 263) insist on a routine chest radiograph (Figs 28-33 pp 255-260) obtain a record of rectal temperatures taken at least twice daily for a week (p 3484)

4 If specimens are obtainable make direct carbol fuchsin stains of sputum urinary sediment gastric contents stool cerebrospinal fluid or biopsy material (Fig 6 p 29)

5 Resort to *Petroff concentration* technic when direct examinations are negative in the presence of suggestive clinical manifestations Instruct patient to reject saliva and only expectorate into the sterilized vessel material brought up from the bronchi Keep sputum until there is a total quantity in excess of 15 cc

To concentrate sputum specimen mix in a flask with equal parts of chlorox a commercial bleaching agent Shake 2 or 3 times over a 2 minute period Keep at room temperature for ten minutes before transference to a 15 cc centrifuge tube with a conical tip Centrifuge at 300 r p m for ten minutes Decant supernatant fluid and drain for two minutes Place a small drop of sediment on a slide and make a moderately thin smear Stain with carbol fuchsin according to the Ziehl Neelsen method (p 52)

6 In infancy and childhood when sputum is swallowed examine gastric contents

Wash a Levine tube (p 1751) in hot water and soap rinse with tap water for thirty minutes boil in a weak solution of sodium carbonate for another half hour and place in the refrigerator overnight In the morning pass tube intranasally before breakfast aspirate at least 5 cc of gastric content with a Luer syringe mix with an equal volume of digestant consisting of 1% sodium hydroxide 0.2% potassium alum and 0.002% brom thymol blue place in water bath at 37 C for thirty minutes shaking occasionally add dropwise 2.5 cc of N/1 hydrochloric acid and shake for thirty seconds after indicator turns blue (pH 7.6) If flocculation does not occur in less than five minutes add 0.2 cc of 1% ferric chloride Shake again until flocculation does occur and then centrifuge at high speed for five minutes Decant supernatant fluid and prepare slides from sediment Dry in air and stain by Ziehl Neelsen method (p 52)

7 Swallowed tubercle bacilli retain staining characteristics despite passage through the digestive tract If sputum and gastric content can not be obtained suspend a specimen of feces concentrate and examine as indicated above

8 If tubercle bacilli are not demonstrable by staining methods try animal inoculation

Centrifuge suspected material decant supernatant fluid inject at least 2 cc of sediment into peritoneal cavity or underneath loose skin of the groin of several guinea pigs carefully house and isolate animals after eight weeks sacrifice them and look for characteristic pearl gray or yellow tubercles in areas of injection crush suspected material between slides dry and stain as previously described

9 In non tuberculous chronic pulmonary infections suspect pathogenic participation of some other organism capable of producing

similar pathologic inflammation. Those microbes which most frequently mimic tubercle bacilli are fungi, histoplasmas, toxoplasmas and helminths (p. 2210).

10. The tuberculin test is not oracular. It does not tell whether or not the patient is suffering from tuberculosis. It does not necessarily imply that the disease is active. Quite simply it denotes that a defensive mechanism has been set up by host tissues against the protein of the tubercle bacillus. The test may be positive when the disease is inactive and the patient is suffering from some quite different invasion. Contrariwise it may be negative in early stages of infection for it takes approximately a month to develop when artificially produced by BCG vaccine. On rare occasions it is negative in the presence of virulent tubercular infection when the patient is anergic or incapable of producing antibody as in fulminating miliary and meningeal involvements and in sarcoidosis.

11. Clinical and radiographic evidences of invasion by tubercle bacilli are not necessarily indicative of activity. Particularly in the case of chest radiographs and palpation of tuberculous nodes the physician merely recognizes scars of a previously active infection. Under these circumstances quite naturally the burden of proof is on the side of proving the innocence of the acid fast organism. But even the combination of a positive tuberculin reaction and a chest radiograph showing a tuberculous lesion is not sufficient to prove that given symptoms necessarily are tuberculous.

12. Demonstration of tubercle bacilli in sputum together with tuberculin positivity and demonstrable radiographic evidences of tuberculous infection also may not necessarily mean that the patient is suffering from tuberculosis. Chronic spitters are a very definite menace to the community at large and to their households and fellow workers in particular but they may have reached a stalemate with the invading microbe where they themselves no longer suffer significantly from tuberculosis despite the weight of positive evidence to the contrary.

13. When the proven tuberculous patient develops evidences of activity such as a rapid sedimentation rate and fever this too may not necessarily be due to tuberculosis. The patient may have a positive tuberculin reaction, a positive chest film, tubercle bacilli in the sputum, a rapid erythrocyte sedimentation rate and fever and still suffer from an unrelated superimposed infection.

14. The clinical manifestations of tuberculosis are tabulated in the accompanying chart. Note particularly under Cutaneous Manifestations that there is a clear differentiation between lesions due to direct implantation with tubercle bacilli (tuberculous diseases of the skin) and those due to hypersensitivity to the protein of tubercle bacilli (tuberculids). In the former acid fast bacilli are demonstrable though the search may be long and tedious; in the latter tubercle bacilli can not be demonstrated or even transmitted to experimental animals although the relationship of the given syndrome to the organism is clinically established beyond doubt.

CLINICAL MANIFESTATIONS OF TUBERCULOSIS

| Involved Structure | Text Page | Figure |
|---|-----------|--|
| CUTANEOUS | | |
| Tuberculous Dermatoses | | |
| Charcote | 3258 | |
| Verruca Cutis | 3259 | |
| Scrofuloderma | 3262 | 951 p 3263 |
| Ulcers | 3262 | |
| Lupus Vulgaris | 3262 | 951 p 3263 |
| Tubercles | | |
| Lichen Scrofulosorum | 3263 | |
| Papulonecrotic | 3270 | |
| Lupus Miliaris Faciei | 3270 | 952 p 3263 |
| Rosacea-like (Lewandowsky) | 3270 | |
| Erythema Induratum | 3271 | 953 p 3263 |
| Sarcoidosis | 3271 | 954 p 3263 |
| RESPIRATORY | | |
| Laryngeal | 2161 | 493-495 p 2162 |
| Acute Miliary | 261 | 27 p 254 |
| Acute Bronchopneumonic | 2189 | |
| Acute Pneumonic | 2189 | |
| Primary Complex | 258 | 28-29 p 255 30 p 256 31 p 257 |
| Pre-phthical | 259 | 32-33 p 250 |
| Chronic Pneumonic | 2199 | 26 p 253 500 p 2200 501 p 2204 502 p 2208 |
| Pleural | 257 | |
| DIGESTIVE | | |
| Oral | 1672 | 343 p 1671 |
| Intestinal | 1660 | 416 p 1661 |
| Peritoneal | 1930 | 417 p 1661 |
| ENDOCRINE | | |
| Adrenal (Addison's Disease) | 1272 | |
| NEUROLOGIC | | |
| Meningeal | 267 1462 | |
| Ocular | 1603 | 276 p 1464 316 p 1604 |
| GENITAL | | |
| Penile | 2455 | |
| Seminal Vesicular | 2468 | |
| Epididymo Orchitic | 2462 | |
| Prostatic | 2472 | |
| Vulvar | 2588 | |
| Uterine Cervix | 2602 | |
| Salpingo-oophoritis and Endometritis | 2610 | 660 p 2610 |
| Mastitic | 2613 | |

CLINICAL MANIFESTATIONS OF TUBERCULOSIS (*Continued*)

| Involved Structure | Text Page | Figure |
|--------------------|-----------|------------|
| URINARY | | |
| Urethral | 2337 | |
| Renal | 2347 | 561 p 2347 |
| | | 562 p 2348 |
| | | 563 p 2349 |
| LOCOMOTOR | | |
| Hip | 2942 | 768 p 2944 |
| Knee | 2945 | 769 p 2944 |
| Spinal | 2962 | 767 p 2963 |
| Ankle | | 770 p 2948 |
| Carpal | | 771 p 2946 |

15 Quite likely differentiation between tuberculous lesions and tuberculids is relative rather than absolute. Probably there are hypersensitivity manifestations in most patients actively infected with tubercle bacilli; certainly hypersensitivity manifestations predicate prior bacterial invasion of host tissues.

16 The practical significance of these observations is currently translatable into the realities of therapeutics. Tuberculocidal preparations may be accounted valuable in the treatment of lesions due to invasion by acid-fast organisms. Quite obviously, however, they cannot be expected to dissipate manifestations of hypersensitivity. On the other hand, antihistamines and preparations possessed of adrenocortical or adrenocorticotrophic activity obviously impotent tuberculocides have therapeutic potential in the prevention and relief of those inflammatory phenomena that are due to hypersensitivity of host tissues to tuberculo-protein.

17 Even these limited considerations of problems in the diagnosis of tuberculosis indicate the complexity of clinical problems presented to the practitioner. In any given situation the following questions arise:

- Does the patient suffer from tuberculosis?
- Is the lesion an invasive inflammatory process or is it a hypersensitivity manifestation?
- What is the degree of activity?
- Are presenting symptoms related to acid-fast invasion or are they merely coincidental?

18 While each individual case must be decided on its merits, certain general guiding principles are definitively established:

- Demonstration of tubercle bacilli definitively establishes that the patient is tuberculous.
- The presence of a positive tuberculin reaction indicates that host tissues have become sensitized to the protein of the tubercle bacillus.
- The association of demonstrable bacilli and a positive tuberculin reaction indicates that the patient has experienced invasion and resultant hypersensitivity.
- The patient who reveals evidences of tuberculous invasion and/or sensitivity to cutaneously introduced tuberculin but has

neither subjective nor objective evidences of activity (normal temperature curve and normal erythrocyte sedimentation rate) may be regarded as one who has suffered infection become sensitized and built up an adequate immunological defense mechanism

- (e) That patient who presents evidences of invasion by tubercle bacilli and sensitization to protein of the invading organism and who has additional signs of activity (constitutional symptoms elevation of temperature and increased erythrocyte sedimentation rate) must be regarded as suffering from tuberculosis until the contrary is proven remembering always that the tuberculous patient may suffer intercurrent diseases in the same manner as the non tuberculous

GENERAL PRINCIPLES OF PROPHYLAXIS

Tuberculosis control programs (exclusive of vaccination) have reduced the death rate in the United States in the past forty years from 200 to 36 per 100 000 population (72 per cent)

During the same period Denmark effected a reduction in mortality from 300 to 32 per 100 000 population (89 per cent) using both segregation and immunization. If the Danish experience were duplicated in the United States addition of BCG vaccination to current prophylactic measures might conceivably result in an annual saving of 9 000 lives

BCG Vaccination

BCG vaccine an attenuated suspension of living tubercle bacilli was originally obtained from growths of a non virulent bovine organism isolated from the milk of a tuberculous cow by Calmette and Guérin in 1906. The *Bacillus Calmette-Guérin* has suffered further reduction in virulence through repeated transfers on artificial media. As a result inoculations with avirulent Calmette-Guérin strain produce only local nodular lesions without progression or generalization of the infectious process. Vaccinated animals later infected with virulent tubercle bacilli are capable of resisting progress vs infection to a very great extent.

In 1931 Petroff dissociated BCG into rough R and smooth S form. The latter had the capacity to produce progressive disease in animals. Rueschthal (working in an isolated laboratory where only BCG was cultured and using many thousands of cultures) demonstrated that BCG was a pure R form and a such incapable of producing progressive tuberculosis. This viewpoint later concurred by Petroff has been verified by the fact that Petroff in an experience that now covers more than thirteen years has never seen progressive disease following BCG inoculation in any phase. He has injected into animals 300 000 times the human dose calculated by weight without producing deleterious effects.

One of the major disasters in tuberculosis vaccination occurred in Lubeck (Germany) where 77 of 271 infants given BCG vaccine by mouth died of progressive disease. Koch acting for the German government proved that Lubeck vaccine was a mixture of BCG and a virulent strain of tubercle bacilli kept in the same incubator as the avirulent product. The virulent strain received from the nearby town of Kiel was readily identified by its phosphorescent green color in Sauter's medium. The use of this virulent strain was regarded by the investigator as criminal and those responsible were imprisoned for an actual malpractice.

BCG vaccine has not yet been licensed for commercial production in the United States of America. However vaccine may be obtained by responsible physicians through application to the Tuberculosis Control Division of the United States Public

Health Service the Tice Laboratory of the Chicago Municipal Tuberculosis Sanitarium, the Henry Phipps Institute of Philadelphia and the University of Illinois

BCG may be introduced by intracutaneous injection, or by the method of multiple puncture. *Intracutaneous injection* is recommended by Aaronson who uses a single introduction, into the arm, of 0.1 or 0.15 mg. of freshly prepared BCG vaccine suspended in physiologic saline solution.

After forty-eight hours intracutaneous injection is followed by development of a sharply defined nodule measuring about 4 mm. in diameter and surrounded by a small halo of redness. During the next two weeks the local inflammatory reaction decreases but the nodule gradually increases in size.

Three to four weeks after vaccination the nodule undergoes a rapid increase in size. At this time the patient usually complains of dull ache at the site of injection, and there is observed a central area of softening. Simultaneously axillary lymphadenopathy is palpable accompanied by sensitiveness but not pain.

Eight to twelve weeks after vaccination, the majority of nodules and their satellite lymph nodes shrink and leave only a soft local scar at the site of inoculation. This may persist for many years.

In an extensive experience Aaronson reports that none of the lymph nodes ulcerated. Only occasionally did a nodule break down leaving an ulcer which later healed. No untoward local or general reactions were observed by this investigator following vaccination and surgical intervention was never required.

The multiple puncture method is recommended by Rosenthal. His preparation (made at the Tice Laboratory of the Chicago Municipal Tuberculosis Sanitarium, and at the University of Illinois College of Medicine) is harvested from a synthetic medium (Sauton) suspended in a buffered saline solution, and put up in capillary tubes in much the same way as is done for vaccine virus.

Rosenthal rejects the oral method, originally advocated by Calmette and later used by Weil Helle. He objects to the intracutaneous route on the basis of local ulcerations which may persist for months with formation of abscesses and suppuration of axillary lymph nodes.

The multiple puncture method of Rosenthal according to the originator of this technic is completely free from complications. In his own words the technic of inoculation is as follows:

A drop of vaccine is placed on the outer aspect of the alcohol-cleaned arm. A sawing type needle similar to the one used for vaccinia, is held between the thumb and the index finger about 1.5 cm. from the point. The thumb and needle should form a continuous line. With the shaft of the needle held tangentially to the skin the vaccine is spread in linear fashion for a distance of 2.5 cm. By a downward pressure exerted to a large extent by the thumb the skin is pierced with the needle point through the vaccine. Following this downstroke which engages the point of the needle into the skin an upward movement is exercised without disengaging the needle. The point of the needle remains buried in the skin on the upstroke. This precaution makes the method fool proof. The punctures are placed about 2 to 4 mm. apart, and ten punctures are made in a line. The vaccine is spread to the second line parallel to the first and 4 to 6 mm. away. Thus three lines of ten punctures each are made in an area of approximately 2.5 by 1.5 cm. The vaccine is allowed to dry on the arm, no blotting or covering with dressings is practiced. Wetting of the arm should be avoided for twenty-four hours.

The lesions following the multiple puncture method in newborn infants resemble goose flesh for two to six weeks following vaccination. In children and adults each puncture progresses to form pink papules from a pinhead to 3 mm. in size. These papules after four to eight weeks regress rapidly. The recipient is usually unaware of which arm was scarified. The draining lymph nodes may be palpable two weeks after vaccination but never enlarge to the extent that the recipient is aware of it. Ulceration and breaking down of lymph nodes have never been seen. (JAMA 136:75, 1948.)

The results of the BCG vaccination have been tabulated both by Aaronson using the intracutaneous method and by Rosenthal who employed his technic of multiple puncture.

Aaronson in a study of 3,000 inoculated American Indians observed 1,457 unvaccinated controls. In the control group 52 died of tuberculosis and, after a span of eleven years, only 39 per cent spontaneously developed a positive tuberculin reaction. By contrast

in the 1550 who were vaccinated there were but six deaths from tuberculosis of the survivors 91 per cent were tuberculin positive after eleven years of observation. In other words the percentage of deaths in the vaccinated group was reduced to 11 per cent as compared to the controls and of the survivors the vaccinated group included more than double the number of tuberculin positive presumably protected individuals.

In Posenthal's experience with 2831 newborn infants living in the poorest district of Chicago but not in household contact with tuberculosis there were eleven cases of tuberculosis in the vaccinated as against thirty nine in the controls there was one fatality in the vaccinated group against seven in the control group. In 1159 siblings of the tuberculous the tuberculosis rate per thousand person years was 5.29 times as great in controls as in the vaccinated. In 256 newborn infants living in tuberculous homes there were two cases of tuberculosis in the vaccinated as compared to five in the controls. None of the vaccinated children died whereas there were four deaths in the control group.

By the method of multiple puncture tuberculin reaction conversion is rapid occurring within one month in virtually all of those observed. A positive tuberculin reaction, following a single vaccination, persisted in 92.6 per cent for approximately four years and in 80 per cent after six years.

Opponents of BCG vaccine no longer sustained by the Lubeck experience or by Petroff's subdivision into R and S strains offer the following reasons for circumspection in considering BCG vaccination.

Knowledge of tuberculosis immunity is inadequate to justify artificial immunization with living organisms.

BCG has failed to immunize animals effectively.

Convincing proof of the value of BCG vaccination is still lacking after a quarter century of use and administration to approximately 7 million persons.

BCG vaccination must be regarded as experimental. Its use should be controlled and limited in order to prevent fostering a false sense of security that would lead to neglect of fundamental procedures.

Proof that BCG is harmless is not absolute. Though inoculation is apparently not immediately dangerous organisms may survive for years and gradually regain virulence.

Favorable reports with rare exceptions have been from inadequately controlled studies.

Diagnostic criteria can be questioned in most of the cases upon which favorable reports are based.

Technics similar to Calmette's method have been tried and discarded. All started from the same shaky premises namely that dependable immunity is not produced by an actual attack of tuberculosis.

The tuberculin skin test a potent weapon against tuberculosis is nullified if tissues are sensitized with BCG administered to a considerable number of the nation's children and adults.

BCG does not prevent virulent tubercle bacilli from entering the human body nor does it destroy them.

Because of the many conflicting views with regard to BCG a conference held under the auspices of the United States Public Health Service met in Washington on September 7, 1946 (Public Health Reports 62:34b). At this time the following conclusions and recommendations were established:

1. Medical literature fails to reveal any proven cases of progressive disease as a result of BCG vaccination.

2. From studies presented at the conference it appears that BCG vaccination confers increased resistance to tuberculosis for the limited period of time covered in these studies.

3. Extensive investigation should be carried out cooperatively with recognized

research groups throughout the country during the coming years especially in population groups highly exposed to tuberculous infection.

4 It is recommended that a single laboratory be established by the Tuberculosis Control Division to produce BCG Vaccine for the whole of the United States for use in research programs as proposed at the conference

While the entire subject of BCG vaccination is in the experimental stage several definitive policies appear to have evolved particularly as the result of the Washington Conference of 1946 In general the following conclusions appear acceptable to most authorities

- 1 Under ordinary conditions with proper housing adequate diet modern hygienic advantages and non-contact with tuberculous individuals in family household or occupation there is no need for universal BCG vaccination in the United States of America
- 2 In less favored countries where the population cannot be guaranteed dietary domiciliary and hygienic advantages of a modern civilization and where there is a high incidence rate of tuberculosis mass BCG vaccination of non reactors merits serious consideration This principle has been implemented by the World Health Organization a subdivision of United Nations in many devastated countries and localities
- 3 Individual BCG vaccination of non reactors by the general practitioner may be required in the United States under special circumstances These include heavy exposure to tuberculosis as in infants born of tuberculous parents children and marital partners of the tuberculous students nurses physicians and personnel exposed to the disease in the pursuit of professional activities occupants of large housing units such as asylums jails dormitories and perhaps the barracks of the armed forces and those who without excessive exposure to tuberculosis are exposed to unhygienic conditions through inadequate diet improper housing crowding and inclement weather conditions
- 4 In some Scandinavian countries where the population is more compact and there is a greater consciousness of public health measures BCG vaccination appears more favored Thus in the Swedish army all non reactors are inoculated In Norway there is a bill making inoculation compulsory In Denmark more than 100 000 people were vaccinated in 1946 and the newly constituted government of India is considering nation wide inoculation In the United States there is an American Indian project embarked on by the government as the result of the high susceptibility of this group to tuberculosis

GENERAL PRINCIPLES OF THERAPY

- 1 Having established the tuberculous etiology of presenting clinical manifestations determined the nature of the inflammatory process whether infectious allergic or both and estimated the degree of activity of the lesions the practitioner next is confronted with the equally intricate problem of devising a therapeutic program

2 Available therapeutic procedures include non specific measures of general hygiene surgical intervention and prescription or administration of tuberculocide and antiallergens For integration of the entire program an initial roundtable consultation with phthisiologist and thoracic surgeon is highly recommended

3 Emphasis on specific therapeutic devices must not overshadow non specific measures These latter include bed rest at home or in the sanitarium climatotherapy dietotherapy heliotherapy psychotherapy, bibliotherapy and occupational therapy (pp 267-272)

4 Surgical procedures may be indispensable to recovery in tuberculosis They include induction of pneumoperitoneum or pneumothorax (p 2033) crushing or avulsion of the phrenic nerve (p 2039) intra pleural pneumolysis thoracoplasty (p 2040) pneumonectomy or lobectomy (p 2039) unilateral nephrectomy or excision of infected testes epididymes tubes ovaries and lymph glands

5 For pharmacotherapy the practitioner has a variety of tuberculocidal preparations as tabulated in the accompanying chart Currently streptomycin para aminosalicylic acid and thiosemicarbazones hold greatest promise for good and least hazard for toxicity Other antibiotics (notably penicillin aureomycin and chloramphenicol) have supplementary value against secondary invaders none being intrinsically tuberculocidal to a significant degree Under investigational scrutiny and not commercially available are benzothiazole fumigacin galacturonide lupulin subtilin and vole vaccine In the group of obsolete preparations are gold and the tuberculins

6 Included in the accompanying chart are also antiallergens Obviously tuberculocides are of no benefit in the treatment of allergic hypersensitivity manifestations

For prevention and treatment of histamine type responses various antihistamines are recommended (p 4212) for control of exudative and proliferative reactions due to perversions of bodily defenses cortisone and ACTH should prove as specific as in the management of related lesions in rheumatic fever and rheumatoid arthritis Until these products become commercially available the practitioner may tentatively try products that are currently on the market These include artisone (Wyeth) and combined desoxycorticosterone (percorten Ciba) with ascorbic acid

7 The most effective available tuberculostatic and tuberculocidal antibiotics are streptomycin and its near relatives dihydrostreptomycin neomycin and terramycin Unfortunately none of the streptomycins is of sufficient potency to cure tuberculosis At best they appear capable of holding off invasion until the natural forces of resistance are capable of conquering the invading microbe Unfortunately also more than any other antibiotic with the possible exception of sulfonamides the streptomycins are capable of inducing antitherapeutic reactions (p 4133) tubercle bacilli rapidly develop bacterial immunity as manifested by the phenomenon of fastness prolonged administration of reasonably large doses produces appreciable neurovestibular toxicity and finally host tissues may develop hypersensitivity manifestations to the therapeutic product itself

**SPECIFIC PREPARATIONS ADVOCATED FOR PREVENTION AND
TREATMENT OF TUBERCULOSIS**

ACTH

For control of proliferative and exudative allergic hypersensitivity manifestations as particularly illustrated by tuberculids (p 4169) Not commercially available See Cortisone

Adrenal Cortical Extracts

See Cortisone

Antihistamines

For prevention and treatment of histamine type allergic hypersensitivity manifestations whether due to protein of tubercle bacillus or to complex formed by union of host protein and tuberculocidal anti-infective agent, particularly streptomycin. Routine administration advocated during activity due to bacterial invasion and during and following therapy with tuberculocides

Ascorbic acid

See Cortisone

Aureomycin N N R

Potent anti-infective agent not tuberculocidal but effective in eradicating secondary invader thus supplementing and fortifying tuberculocides

BCG

Bacillus Calmette-Guérin for vaccination of tuberculin-negative reactors under circumstances elsewhere detailed (p 4602) No official or commercially available preparation

Benzothiazole

Synthetic antibiotic currently being investigated in experimental tuberculosis. Not commercially available

Calciferol

A preparation of vitamin D₂ used primarily in the treatment of cutaneous tuberculosis (p 4322)

Carbamyl

Under investigation. Not commercially available

Chloramphenicol N N R

Potent anti-infective agent not tuberculocidal but effective in eradicating secondary invaders thus supplementing and fortifying tuberculocides

Conteben (TB I 698)

See thiosemicarbazones. A synthetic tuberculocide with the formula 4-amino-acetyl-benzaldehyde-thiosemicarbazone. In doses of 2 mg/Kg/day exhibits efficacy approximating that of PAS

Cortisone (Cortone)

For control of proliferative and exudative allergic hypersensitivity manifestations as particularly illustrated by tuberculids (p 4169) Until commercially available try desoxycorticosterone (percorten Ciba) and ascorbic acid.

Desoxycorticosterone

See Cortisone

SPECIFIC PREPARATIONS ADVOCATED FOR PREVENTION AND TREATMENT OF TUBERCULOSIS (Continued)

Dihydrostreptomycin

Resembles streptomycin in tuberculocidal potential and in therapeutic hazard. Because neurotoxicity does not become apparent until some time after cessation of drug prefer streptomycin whose administration may be discontinued at onset of untoward manifestations. All in all investigators are dubious of the usefulness of dihydrostreptomycin.

Gold

Obsolete in treatment of tuberculosis (p 4346)

Lupuhn

Antibiotic derived from hops. Under investigation for treatment of tuberculosis. Not commercially available.

Neomycin

In doses of 3 mg/Kg/day approximates tuberculocidal activity of streptomycin with somewhat less toxicity. Not yet commercially available.

New Tuberculin NNR

Bacterial emulsion of which 1 cc corresponds to 5 mg of tubercle bacilli. Not commercially available. For prophylactic use prefer BCG.

New Tuberculin TR NNR

Each cc contains residue of 10 mg of living dried tubercle bacilli. Not commercially available. For prophylactic vaccination prefer BCG.

New Tuberculin BE Dried NNR

Tubercle bacilli dried and ground mixed with a suitable base and made into tablets adjusted so that each represents the desired amount of New Tuberculin BE per cc. Not commercially available. For prophylactic vaccination prefer BCG.

New Tuberculin TR Dried NNR

As New Tuberculin above but disintegrated dried and made into tablets. Not commercially available. For prophylactic vaccination prefer BCG.

Old Tuberculin U S P

For skin testing. Use Lederle, Lilly or Parke Davis products for Mantoux (pp 263-261) use Parke Davis Old Tuberculin for Von Pirquet. For Vollmer patch test use Lederle Tuberculin Patch Test each strip having two test squares and one control square (Fig 33 p 264 and Fig 34 p 263).

Para-aminosalicylic Acid (PAS)

Tuberculocidal synthetic for use alone in the treatment of tuberculosis or concurrently with streptomycin. Commercially available in powder form (Merck) or in tablets of 0.3 gm (Parke Davis). Recommended daily dose 10 to 12 gm. See below.

Penicillin NNR

Potent antiseptic agent not tuberculocidal but effective in eradicating secondary invaders thus supplementing and fortifying tuberculocide.

Percortan

See Cortisone

**SPECIFIC PREPARATIONS ADVOCATED FOR PREVENTION AND
TREATMENT OF TUBERCULOSIS** *(Continued)*

Purified Protein Derivative (PPD) U S P

For Mantoux intracutaneous test Tablets of first strength equal 0.00002 mg second strength 0.005 mg (Parke Davis)

Streptomycin ■ N R.

Currently the most successful tuberculostatic and tuberculocidal antibiotic
See below

Sublin

Antibiotic under experimental investigation Not commercially available

Sulfones

Promizole promin, diasone and sulphatone as used in the treatment of leprosy (p 4386) Too toxic for use in tuberculosis except as desperation supplementation in overwhelming infection such as tuberculous meningitis or miliary forms of tuberculosis

T Acetamidobenzaldehyde

A thiosemicarbazone commercially available as conteben

TB I 698

A thiosemicarbazone commercially available as conteben and tibione

Thiosemicarbazones

Synthetic chemotherapeutic agents with tuberculocidal potential Presently available in Europe as Conteбен or TB I 698 Marketed in tablets containing 0.125 gm with an equal quantity of sulfathiazole Given orally in doses of 2 mg /Kg /day Conteбен or TB I (Tibione) exhibits efficacy approximating that of PAS but with greater toxic potential See below

Tibione (Schenley)

Commercially available in 25 and 50 mg tablets in U S A.

Tuberculin Denys N R

A glycerin broth culture of tubercle bacilli Not commercially available For prophylactic vaccination prefer BCG

Vitamin D

See calciferol

Vole Vaccine

Prepared from vole bacilli killed by ultraviolet rays Used experimentally to produce immunity against M tuberculosis in guinea pigs Not commercially available but regarded as affording protection equal to BCG in experimental animals

8 With remarkable ingenuity investigators have sought to overcome objections to streptomycin therapy of tuberculosis Concurrent administration of para aminosalicylic acid appears to reduce emergence of fast strains from an expected 80 per cent to 30 per cent concurrent prescription of antihistamines reduces neurovestibular toxicity and lessens histamine type allergic hypersensitivity manifestations such as toxicodermis drug fever leukocytosis and eosinophilia

9 All experienced clinicians are opposed to routine use of streptomycin in tuberculosis. In general indications for streptomycin therapy include fulminating infections such as miliary or meningeal tuberculosis in which the life of the patient hangs in the balance exudative pulmonary lesions persistence of tubercle bacilli in secretions or excretions tension cavities even without demonstrable organisms in the sputum and failure to respond or actual progression, despite non specific therapy with or without surgical intervention after a scrupulous trial period of 3-4 months

10 During streptomycin therapy the following information must be collected

- (a) daily weight
- (b) rectal temperature record
- (c) biweekly urine analysis
- (d) weekly blood count
- (e) determination of blood urea and non protein nitrogen every second week
- (f) audiometer readings at fortnightly intervals daily determination of detection of whispered voice
- (g) chest radiography pretreatment and at monthly intervals thereafter
- (h) estimation of erythrocyte sedimentation rate once a month
- (i) examinations of sputum gastric contents stool urine or sections of tissue pretreatment and monthly thereafter
- (j) guinea pig inoculations at monthly intervals after direct and concentrated specimens have been reported negative
- (k) determination of organism sensitivity to streptomycin at monthly intervals
- (l) protection of streptomycin handlers by use of gloves and a mask while making solutions and giving injections. Only in this way is it possible to minimize contact dermatitis or cheilitis in personnel

11 The toxicology of streptomycins has received previous consideration (p 105). In the presence of an exfoliative dermatitis stop antibiotic and substitute dihydrostreptomycin with bone marrow depression discontinue antibiotic permanently with diminution in hearing temporarily interrupt streptomycin injections and resume only if hazard of the tuberculosis exceeds hazard of permanent deafness with albuminuria and casts in the urine exercise caution particularly in patients with evidences of depressed renal function or with renal tuberculosis with nitrogen retention stop antibiotic unless threat of infectious process is grave at onset of vertigo reduce amount of drug and consider cessation at least temporarily if clinical circumstances permit briefly interrupt antibiotic therapy in the presence of drug fever nausea vomiting circumoral paresthesia or toxicoderms suggestive of histamine type allergic hypersensitivity with demonstrable increased bacterial resistance supplement with para aminosalicylic acid or if PAS is already on the therapeutic program increase daily dose to 15 gm. if possible

12 In acute emergencies such as meningeal and acute miliary tuberculosis and in exudative pulmonary infections give drug toxicity only secondary consideration. Under these circumstances inject intramuscularly 1 gm of streptomycin once twice or thrice daily for 120 days provided that menacing toxic manifestations do not appear. Many authorities favor simultaneous intrathecal instillations in meningeal forms of 0.05 gm of streptomycin every second or third day for approximately one month. However we are among those who frown on intrathecal therapy of any type (p 440⁹).

13 With less urgent indications for streptomycin therapy experts agree that smaller doses are preferable to larger amounts. Currently it is the opinion that an optimum course consists of daily doses of 1 gm for forty two days (Council on Streptomycin Therapy of the Veterans Administration). In the experience of most phthisiologists the 6 week period of streptomycin therapy affords maximum therapeutic efficacy and minimum chances for toxicity or emergence of fast bacterial strains.

14 There appears to be fairly unanimous agreement that 90 day courses are required in more resistant forms of extrapulmonary tuberculosis such as involvements of tracheobronchial tree larynx lymph nodes bone cartilage joints mouth pharynx intestines peritoneum pericardium skin ocular structures and ears.

15 Exercise particular precautions in genito urinary tuberculosis since diminution of renal function may increase blood levels of streptomycin four fold and result in toxic manifestations from seemingly insignificant doses. Before treatment is instituted and weekly thereafter estimations of renal function and blood chemistry are required. With impairment of kidneys interrupted courses merit consideration. Antibiotic may be given three days on and three days off or fifteen days on and fifteen days off preferably with concurrent para aminosalicylic acid.

16 As an adjuvant to surgery streptomycin therapy is particularly useful especially if used in conjunction with para aminosalicylic acid. Before performance of most operative procedures a 1 week course of treatment is highly recommended. Following operation antibiotic is injected for at least two to three weeks.

17 There are almost as many variants in streptomycin therapy as there are investigators. Certain physicians recommend that the daily dose be a single injection of 1 gm others deposit 0.5 gm twice daily. Still others continue therapy for ninety to one hundred twenty days in the absence of toxic manifestations.

18 Interrupted schedules are favored by some experienced clinicians. Recommended routines call for antibiotic two days on and one day off three days on and three days off fifteen days on and fifteen days off and finally 1 gm twice weekly for 35 injections (120 days).

19 Para aminosalicylic acid (PAS) currently is second choice to streptomycin as a tuberculocide. Doses of 3 gm four times daily to total 12 gm per 24 hours are recommended.

20 Given alone para aminosalicylic acid has definitive but only

moderate tuberculostatic and tuberculocidal properties. In favorable responses temperature approaches normal, sedimentation rate is decreased, cough is diminished, expectoration is reduced, bacilli diminish in numbers or disappear from sputum, appetite improves, body weight increases and blood count rises.

21 Other than gastro intestinal disturbances which disappear on interruption of therapy, para aminosalicylic acid appears to have no significant toxicity. Compared to thiosemicarbazones, PAS is equally tuberculocidal but considerably less toxic.

22 With gastro intestinal distress arising from PAS, discontinue drug temporarily and resume as soon as stomach is tolerant. Begin retreatment with 6 gm daily, increase gradually to full therapeutic dose if possible. If less than 6 gm daily are tolerated, discontinue drug since no appreciable tuberculocidal effect can be anticipated from low concentrations.

23 In addition to its inherent use as a tuberculocide, para amino salicylic acid functions synergistically with streptomycin. Combinations of the two tuberculocides appear to be more effective than the sum of both drugs used separately. In addition, PAS permits use of smaller doses of streptomycin and thus reduces the hazard of drug toxicity. It discourages the emergence of streptomycin resistant organisms and additionally is as tuberculocidal in its effect on streptomycin resistant tubercle bacilli as it is on streptomycin sensitive strains.

24 The most recent additions to the tuberculocides are the thiosemicarbazones (8th Streptomycin Conference, Atlanta, Georgia, Nov 12, 1949). Commercially available is conteben in Germany, referred to also in the literature as TB I, Tibione and TB I 698. The recommended oral dose is 2 mg per kg of body weight per day or 140 mg for the average adult weighing 150 lbs. Tibione is now commercially available in the United States. Tablets of 25 and 50 mg are supplied by Schenley.

25 The thiosemicarbazones are tuberculocidal in the test tube and in clinical experimentation. They are less efficacious than streptomycin but about of equal potency with PAS. Unfortunately they are considerably more toxic than either previously mentioned preparation. They may produce gastric irritation, nausea, vomiting, hepatitis, irritability, headache, increased intracranial pressure, conjunctivitis, dermatoses, hemolysis, agranulocytosis, aplastic anemia and toxic neuritis. On the favorable side, encouraging results of thiosemicarbazone therapy have been noted in exudative pulmonary lesions and in intestinal, laryngeal and osteoarthritic forms of tuberculosis. The new drug, however, is useless in the management of military and meningeal infections. Prolonged drug administration is desirable, the average recommendation being no less than 6 months and preferably a year.

26 Because of encouraging results of sulfone therapy in leprosy, concurrent administration of promizole with streptomycin has been recommended in the treatment of tuberculous meningitis. However, the Council on Streptomycin Therapy of the Veterans Administration found no objective evidences of the superiority of the combination of sulfone and streptomycin over streptomycin alone and joint use of the

two drugs was distinctly more troublesome. Nevertheless in serious exigencies such as meningeal and acute miliary tuberculosis promizole may be tried as fourth choice to streptomycin. PAS and thio emicarbazone in doses of 2 gm. four times daily to achieve blood levels of 2 to 3 mg per 100 cc. Toxic manifestations of sulfone therapy are elsewhere detailed (p 4552).

27 Preceding concurrently and following streptomycin therapy administer antihistamines as pyribenzamine benadryl or one of their substitutes in daily doses of 200 to 400 mg. The antihistamines have negligible toxicity and may prevent or alleviate histamine type allergic hypersensitivity manifestations whether due to tuberculo protein or to administration of antibiotic agent.

28 In the presence of secondarily infected tuberculous lesions favor combined antibiotic therapy in order to eliminate streptomycin resistant organisms. As first choice give deposits of procaine penicillin G in aqueous suspension in daily doses of 300 000 to 600 000 units. Penicillin has negligible digestive side effects whereas aureomycin and chloramphenicol may produce nausea and vomiting interfering with use of tuberculocides particularly para aminosalicylic acid and thio emicarbazones.

29 A complete therapeutic schedule where indications exist may call for daily intramuscular injections of 1 gm. of streptomycin and of 300 000 to 600 000 units of procaine penicillin G in aqueous suspension and of oral doses of 200 to 400 mg. of antihistamine with 12 gm. of para amino salicylic acid or 50 to 200 mg. of thiosemicarbazone.

30 Despite the complexity of the pharmacologic schedule the seasoned practitioner will not neglect mechanical procedures particularly collapse therapy. As soon as the therapeutic schedule has been inaugurated consult with phthisiologist and thoracic surgeon for a discussion of pneumoperitoneum pneumothorax or phrenic paralysis or of operative procedures previously outlined.

Practical Management

Arrangement of a therapeutic program for the individual tuberculous patient poses a formidable challenge to the practitioner. Obviously no single static schedule can meet variables due to bacillary invasion host tissue reactions and observed response to prescribed therapeutic products and procedures. The discussions of practical management which follow are relatively fluid recommendations in which prime emphasis is placed on only three of the many variables i.e. tuberculin reactivity the presence or absence of demonstrable organic lesions and evidences of activity.

I TUBERCULIN TEST NEGATIVE NO DEMONSTRABLE LESIONS NO CLINICAL EVIDENCES OF ACTIVITY

1 An increasing number of children and many adults dwelling under optimum conditions of civilization reveal tuberculin negativity. It must be assumed that these patients are virginal and that their

moderate tuberculostatic and tuberculocidal properties. In favorable responses temperature approaches normal, sedimentation rate is decreased, cough is diminished, expectoration is reduced, bacilli diminish in numbers or disappear from sputum, appetite improves, body weight increases and blood count rises.

21 Other than gastro intestinal disturbances which disappear on interruption of therapy, para aminosalicylic acid appears to have no significant toxicity. Compared to thiosemicarbazones, PAS is equally tuberculocidal but considerably less toxic.

22 With gastro intestinal distress arising from PAS, discontinue drug temporarily and resume as soon as stomach is tolerant. Begin retreatment with 6 gm daily. Increase gradually to full therapeutic dose if possible. If less than 6 gm daily are tolerated, discontinue drug since no appreciable tuberculocidal effect can be anticipated from low concentrations.

23 In addition to its inherent use as a tuberculocide, para-aminosalicylic acid functions synergistically with streptomycin. Combination of the two tuberculocides appear to be more effective than the sum of both drugs used separately. In addition, PAS permits use of smaller doses of streptomycin and thus reduces the hazard of drug toxicity. It discourages the emergence of streptomycin resistant organisms and additionally is as tuberculocidal in its effect on streptomycin resistant tubercle bacilli as it is on streptomycin sensitive strains.

24 The most recent additions to the tuberculocides are the thiosemicarbazones (8th Streptomycin Conference, Atlanta, Georgia, Nov 12, 1949). Commercially available is conteben in Germany, referred to also in the literature as TB 1, Tibione and TB 1698. The recommended oral dose is 2 mg per kg of body weight per day or 140 mg for the average adult weighing 150 lbs. Tibione is now commercially available in the United States. Tablets of 25 and 50 mg are supplied by Schenley.

25 The thiosemicarbazones are tuberculocidal in the test tube and in clinical experimentation. They are less efficacious than streptomycin but about of equal potency with PAS. Unfortunately, they are considerably more toxic than either previously mentioned preparation. They may produce gastric irritation, nausea, vomiting, hepatitis, irritability, headache, increased intracranial pressure, conjunctivitis, dermatoses, hemolysis, agranulocytosis, aplastic anemia and toxic neuritis. On the favorable side, encouraging results of thiosemicarbazone therapy have been noted in exudative pulmonary lesions and in intestinal, laryngeal and osteoarthritic forms of tuberculosis. The new drug, however, is useless in the management of military and meningeal infections. Prolonged drug administration is desirable, the average recommendation being no less than 6 months and preferably a year.

26 Because of encouraging results of sulfone therapy in leprosy, concurrent administration of promizole with streptomycin has been recommended in the treatment of tuberculous meningitis. However, the Council on Streptomycin Therapy of the Veterans Administration found no objective evidences of the superiority of the combination of sulfone and streptomycin over streptomycin alone and joint use of the

III TUBERCULIN TEST POSITIVE DEMONSTRABLE LESIONS BY PHYSICAL EXAMINATION OR RADIOGRAPHY NO EVIDENCES OF ACTIVITY

1 Assume that these patients have suffered subclinical infection or ancient invasion with development of active immunity and recovery through fibrosis and cicatrization with or without calcification

2 Treat by skillful neglect Other forms of specific therapy are distinctly contraindicated

3 In the presence of future evidences of active invasion with fever tachycardia and a rapid sedimentation rate differentiate between exacerbation of the ancient tuberculous process and development of intercurrent infection

4 Exclude tuberculosis by absence of demonstrable acid fast bacilli by demonstration of another microbic invader by therapeutic response to non tuberculocidal antibiotic agents such as penicillin aureomycin or chloramphenicol or by spontaneous subsidence of the infectious process within the course of a few days or weeks

5 In convalescence from intercurrent infection watch carefully for evidences of recrudescence of the tuberculous infection Insist on a long period of convalescence Forbid resumption of activities until temperature pulse rate sedimentation rate chest radiographs and clinical manifestations leave no doubt as to the completeness of recovery

IV TUBERCULIN TEST POSITIVE MINIMAL LESIONS OF PRIMARY INFECT WITHOUT EXUDATION OR DESTRUCTION EVIDENCES OF SUBCLINICAL TO MILD ACTIVITY

1 Request a round table consultation with phthisiologist and thoracic surgeon Fully discuss all aspects of therapy including use of tuberculocidal drugs and supplementary mechanical measures of collapse accomplished by pneumoperitoneum pneumothorax phrenic nerve crushing or avulsion

2 Institute non specific treatment for tuberculosis (pp 267-272) Consider home versus sanitarium therapy

3 Order daily doses of 200 to 400 mg of pyribenzamine benadryl or a substitute antihistamine to minimize or prevent histamine type hypersensitivity reactions

4 Prescribe 3 gm of para aminosalicylic acid four times daily for tuberculocidal effects without hazard of significant toxicity

5 Explain to patient and family reasoning behind reservation of streptomycin therapy

6 Emphasize favorable aspects of prognosis as a measure of psychotherapy

Continuing Care (Favorable Course)

1 Insist on a prolonged period of convalescence Try to prevent resumption of normal activity until the expiration of six to twelve months

defenses have never been tested by the tubercle bacillus. Depending on many external circumstances the patient may be exposed to compulsory mass or individual vaccination or he may be treated by skillful neglect.

2 Compulsory BCG vaccination of tuberculin non reactors is practiced in Sweden, Norway and Denmark.

3 Mass BCG vaccination is advocated in areas where there is a high tuberculosis morbidity and mortality in the presence of bad housing, malnutrition and exposure to inclement weather and in overcrowded institutions such as barracks, asylums, homes and jails (p 4602). The United Nations have vaccinated 400,000 children in Europe and in Morocco, Tunisia, Algiers, Egypt, Israel, Lebanon, China, India, Pakistan, Ceylon, etc. In the United States, mass vaccination is currently practiced among American Indians and in certain underprivileged areas in the deep South.

4 Individual BCG vaccination is recommended for personal reasons such as heavy exposure to open tuberculosis in the home, infants, children and marital partners of the tuberculous, occupational contact as in the case of physicians, nurses, medical students, laboratory technicians and the personnel of sanatoria or hospitals which admit patients with tuberculosis, lowered resistance due to malnutrition, contact with masses of tuberculous patients as occurs when occupation troops, police and other authorities are assigned to duty in devastated areas.

5 The general practitioner, unfamiliar with the technique of BCG vaccination, may request that the procedure be done by a public health authority or a consultant.

6 For the first month following vaccination, protect patients from exposure to tuberculosis. Infants of tuberculous mothers, especially, must be segregated until a natural active immunity is built up.

7 For the present, regard vaccination with vole bacillus as purely experimental and chemoprophylaxis with antibiotics and tuberculocides as impracticable.

II TUBERCULIN TEST POSITIVE, NO DEMONSTRABLE LESIONS NO EVIDENCES OF ACTIVITY

1 Tuberculin positive reactors who display no evidences of tuberculous lesions or of activity may be regarded as having developed an immunity mechanism after exposure to the organism.

2 Tuberculin negative reactors inoculated with BCG vaccine develop tuberculin positivity within the course of the month. On the basis of extensive experiences, it may now be stated that artificial immunity created by the avirulent tubercle vaccine strikingly reduces morbidity and mortality.

3 Whether tuberculin positivity has been achieved by natural or artificial means, consider the patient adequately protected. Treat by skillful neglect. Other measures are meddlesome and distinctly contraindicated.

7 If pneumothorax cannot be accomplished for technical reasons consider pneumoperitoneum crushing or avulsion of the phrenic nerve intrapleural pneumolysis thoracoplasty or excision of the grossly infected end organ such as kidney testicle epididymis tube ovary or lymph node

Continuing Care (Favorable Course)

- 1 At the termination of forty two days of streptomycin therapy review status of patient with phthisiologist and thoracic surgeon
- 2 Do not make the mistake of prematurely discontinuing a successful therapeutic schedule In the absence of toxic manifestations from streptomycin favor continuance of antibiotic therapy particularly in the presence of lesions of trachea bronchi larynx lymph nodes bones joints cartilage mouth pharynx intestines peritoneum pericardium skin ocular structures or ears
- 3 In the presence of mild toxic manifestations taper off tuberculocides Try injections of streptomycin for three days on and three days off alternating with oral doses of para aminosalicylic acid try periods of fifteen days of treatment with intervening treatment holidays of fifteen days or inject streptomycin in doses of 1 gm twice weekly for 4 months omitting para aminosalicylic acid on injection days

Continuing Care (Unfavorable Course)

- 1 In the presence of bacterial fastness discontinue streptomycin increase dose of para aminosalicylic acid to 15 gm daily or substitute dihydrostreptomycin neomycin or terramycin for the original tuberculocides
- 2 Cautiously try to increase the dose of the substituted streptomycin using perhaps 1.5 to 2 gm daily
- 3 If the patient is intolerant of para aminosalicylic acid substitute thiozone or any other commercially available thiosemicarbazone Start with a daily dose of 50 mg and increase to 200 mg unless toxic symptoms are encountered (p 4609)
- 4 Renew consultations with thoracic surgeon Consider more extensive surgical procedures as measures of desperation

VI TUBERCULIN TEST NEGATIVE OR POSITIVE FULMINATING EXUDATIVE LESIONS OR MANIFESTATIONS OF SYSTEMIC HEMATOGENOUS OR LYMPHOGENOUS DISSEMINATION MENACING EVIDENCES OF ACTIVITY WITH URGENT JEOPARDY TO LIFE

- 1 Insist on hospitalization and inauguration of measures previously advocated for less serious infections institute non specific measures of general hygienic therapy (pp 267-272) prescribe oral doses of antihistamines and of para aminosalicylic acid and try to eradicate secondary infection with intramuscular deposits of procaine penicillin or oral use of aureomycin or chloramphenicol

2 Insist on record of rectal temperature at least two full days in each week

3 Schedule monthly visits for chest radiography and estimation of erythrocyte sedimentation rate

Continuing Care (Unfavorable Course)

1 With continued pyrexia tachycardia failure to gain weight and strength persistence of lesions and/or bacilli in sputum resort to schedule suggested for those in category V next outlined

2 The complication of hemoptysis is usually more alarming than menacing Unless there has been a massive or continued loss of blood it is only necessary to reassure and sedate the patient Massive hemoptysis however calls for heroic measures the best available hemostatic procedure being induction of artificial pneumothorax or collapse of the lung by open surgical procedure meanwhile compensating for blood loss by transfusion

V TUBERCULIN TEST POSITIVE PERSISTENT OR PROGRESSIVE LESIONS WITH EVIDENCES OF EXUDATION AND TISSUE DESTRUCTION SIGNS OF MODERATE ACTIVITY

1 Institute or continue suggestions for management of infections of lesser severity Insist on round table consultation with phthisiologist and thoracic surgeon Inaugurate non specific treatment for tuberculosis (pp 267-272) order antihistamine and prescribe para amino salicylic acid

2 Start intramuscular injections of streptomycin Deposit 0.5 gm twice daily or 1 gm daily for a probatory period of forty two days

3 At each daily visit note temperature records weight acuity of hearing and complaints of vertigo or digestive disturbances possibly due to drug

4 Order urine examinations twice weekly blood counts once weekly blood chemistry each fortnight chest radiography and examination of sputum gastric contents stool urine or tissue sections at monthly intervals Request bacteriologist to determine organism sensitivity to streptomycin at each examination

5 In the presence of suspected secondary bacterial invasion by organisms possibly resistant to streptomycin consider combined antibiotic therapy For maximum coverage of the bacterial spectrum give chloramphenicol orally using approximately 50 mg per kilogram per day (3.5 gm for the average adult weighing 150 lbs) For less complete coverage and less hazard of gastric intolerance deposit intramuscularly 300 000 to 600 000 units of crystalline procaine penicillin G in aqueous solution once daily

6 Favor induction of pneumothorax if the lesion is predominantly unilateral if there are greater evidences of tissue destruction or exudation in one lung as opposed to the other or if the response to combined tuberculocides and antibiotics is not satisfactory within the course of the first two weeks

the home or in industry until a significant active immunity has been developed

2 In fulminating infections such as miliary tuberculosis and tuberculous meningitis when the skin test is negative despite an active invasion with acid fast organisms more intensive tuberculocidal therapy is required since the patient has no resources with which to fortify artificial chemotherapeutic procedures

3 In certain rare low grade tuberculous manifestations such as arcoidosis (p 3271 Fig 954 p 3263) it must be assumed that the patient is in a state of anergy and hence incapable of producing antibody Under these circumstances consider artificial stimulation of antibody by use of tuberculin and by administration of vitamin D₂ or dihydrotachysterol (p 4322)

TULAREMIA

[Deer Fly Fever Rabbit Fever]

Principles of Diagnosis and Therapy

1 Experiences in Arkansas suggest that tularemia (p 323) is more often tick borne than transmitted by handling of infected animals (rabbits squirrels etc)

2 Treatment has been revolutionized first by the specificity of streptomycin later by aureomycin and chloramphenicol

Practical Management

Immediate Care

1 Irrespective of type (pp 323-324) arrange for hospitalization if possible

2 Institute non specific treatment for generalized infections (pp 68-73)

3 Notify public health officials

4 Order a priming dose of 100 mg per kilogram of body weight (7 gm for average adult weighing 150 lbs) of aureomycin or chloramphenicol Order 4 products (1 gm) every few minutes until total dose of 28 has been ingested With each dose give milk soup cream cheese or ice cream

5 For ophthalmic infections instill aureomycin ophthalmic solution (1 cc = 25 mg) into conjunctival sac

6 Use moist wet applications to local lesions and lymph nodes Avoid incision (Fig 47 p 319)

Continuing Care (Favorable Course)

1 Continue antibiotic using 4 products (1 gm) every three hours except at 3 A M until patient has been afebrile for at least forty

2 After consultation with phthisiologist and thoracic surgeon increase streptomycin dosage to 1 gm thrice daily

3 Try to increase daily dose of para aminosalicylic acid to 15 gm. If stomach is intolerant substitute thiosemicarbazone in daily doses of 50 to 200 mg

4 In tuberculous meningitis consider intrathecal injections of 0.05 gm of streptomycin. Although this procedure appears illogical and hazardous it is recommended by many experienced clinicians (p. 4409)

5 In the presence of a negative response to streptomycin or of emergence of fast bacterial strains substitute dihydrostreptomycin, neomycin or terramycin

6 With failure of response and gastric intolerance to para aminosalicylic acid and thiosemicarbazone cautiously substitute promizole in doses of 2 gm four times daily carefully observing urine and blood count

VII TUBERCULIN TEST POSITIVE DEMONSTRABLE ALLERGIC HYPERSENSITIVITY REACTIONS (TUBERCULIDS) NEGLECTIBLE EVIDENCES OF ACTIVITY

1 Regard lesion as an allergic manifestation rather than a bacteria invasion

2 Prescribe antihistamine in daily oral doses up to 800 mg of pyribenzamine or benadryl

3 Treat exudative and proliferative lesions with cortisone or ACTH when available. In the meantime try probatory therapy with artiscrone injected intramuscularly or with the combination of desoxycortisone and ascorbic acid. To accomplish the latter objective deposit intramuscularly 1 cc of per corten (Ciba) containing 5 mg of desoxycortisone. Follow in 5 minutes by intravenous injection of 10 cc of 10% ascorbic acid. Continue treatments daily for three days. Unless response is spectacular abandon therapy at the end of this trial period

4 For lesions of lupus vulgaris or scrofuloderma prescribe vitamin D. Give 50,000 units of calciferol in oil thrice daily. Follow a similar schedule in lupus miliaris disseminatus faciei, rosacea like eruption of Levandowski, erythema induratum, cutaneous and generalized sarcoidosis and other possible tuberculids

5 Omit use of tuberculocides. Streptomycin particularly may give rise to similar allergic hypersensitivity manifestations and can do no good

6 With persistence of lesions consult dermatologist. Discuss radiotherapy

VIII TUBERCULIN TEST NEGATIVE DEMONSTRABLE INVASIVE LESIONS EVIDENCES OF ACTIVITY

1 The tuberculin test does not become positive for at least one month after BCG vaccination. Under these circumstances segregate infants of tuberculous mothers and others exposed to tuberculosis in

or 7 gm for average adult weighing 150 pounds) Give 2 products every few minutes until total number of 28 has been ingested

Continuing Care (Favorable Course)

- 1 Maintain antibiotic levels with total daily dose equal to priming dose i.e. 4 products (1 gm) every 3 hours except at 3 A.M.
- 2 Warn patient not to expect specific clinical improvement for forty eight hours
- 3 Reduce daily dose after two weeks to 6 gm after three weeks to 4 gm but continue for another three to six weeks to prevent relapse or recurrence

Continuing Care (Unfavorable Course)

- 1 Since complications may occur despite deference these must be dealt with as in the earlier period before specific therapy was successfully instituted (p. 234)
- 2 For relapse increase drug dosage to original level or if necessary to double or treble quantities
- 3 For hemorrhage set up an intravenous drip and infuse plasma until cross matched blood can be obtained Do not hesitate to introduce 1000 to 1500 cc if bleeding is massive and continued
- 4 For perforation consider surgery under local anesthesia
- 5 If stomach is intolerant give chloramphenicol by duodenal tube improvising a suspension in milk or soup

TYPHUS FEVER

[Kenya Tick Fever Manchurian Fever Queensland Coastal Fever
South African Tick Fever Toulon Ship Fever Torbadillo
Ship Typhus of Malaya]

General Principles of Diagnosis and Therapy

- 1 For present purposes louse borne and rat or flea borne typhus fever may be regarded as one and the same disease (p. 369)
- 2 Aside from a history of the presence of the disease the diagnostic feature is the characteristic rash (Fig. 57 p. 370)
- 3 In the laboratory the diagnosis is established by Weil Felix reaction (p. 372) and by inoculation of guinea pigs (Fig. 12A p. 63)
- 4 The etiologic *Rickettsia prowazeki* is insensitive to sulfonamide penicillin and streptomycin but sensitive to para aminobenzoic acid and especially to aureomycin and chloramphenicol

Practical Management

Prophylaxis

- 1 Active immunity is accomplished by 3 subcutaneous injections each of 1 cc of Parke Davis typhus vaccine (p. 4209) Immunity per

eight hours Give 1 gm every six hours for another forty eight hours and then discontinue if all is well

Continuing Care (Unfavorable Course)

- 1 If stomach is tolerant double dose of chosen antibiotic or continue above dose and give an equal amount of the alternate
- 2 If stomach is intolerant to either antibiotic use alternate in similar doses or substitute terramycin
- 3 If patient is intolerant of both aureomycin and chloramphenicol substitute streptomycin Inject intramuscularly 1 gm as priming dose Maintain level with 0.5 gm every eight or twelve hours depending on response Continue for three or four days after defervescence
- 4 With first dose of streptomycin start oral antihistamine prophylactically Give 200 mg daily of pyribenzamine or benadryl (p 4212) Continue for two weeks after last dose
- 5 Obsolete are human convalescent tularemia antiserum and heterologous tularemia antibacterial serum
- 6 Tularensis vaccine never commercially available also is obsolete For prevention rely on chemoprophylaxis (p 4362)

TYPHOID FEVER

Principles of Diagnosis and Therapy

- 1 Whereas there have been no significant contributions to the diagnostic pathologic and clinical features of typhoid fever (p 225 Fig 25 p 231) specific therapy with chloramphenicol (p 4279) has revolutionized the management of a disease for which previously only supportive and symptomatic management was available (p 236)

Practical Management

Prophylaxis

- 1 Give routine immunization with typhoid vaccine (p 4209) Triple vaccine containing additionally paratyphoid A and B has wisely been dropped by the Council since it added appreciably to reactions but inappreciably to protection
- 2 Use insecticides (p 4373) and other methods of fly control to prevent dissemination of microbe by insect vectors
- 3 Treat human carriers with insoluble sulfonamides (p 4548) streptomycin or chloramphenicol for sterilization of urines and stools Consider cholecystectomy if carrier state fails to respond to nonoperative therapy

Immediate Care

- 1 Institute nonspecific measures previously described (p 236) since complications may occur despite specific therapy
- 2 Order a priming dose of chloramphenicol (100 mg per kilogram

Tyrozets Throat Lozenges (Sharp & Dohme) containing tyrothricin 1 mg benzocaine 5 mg

Bacteriology

Tyrothricin contains two water soluble crystalline polypeptides Gramicidin the more active is relatively non toxic and is selectively effective against gram positive organisms the ether soluble component tyrocidin is bactericidal against a variety of organisms but is so toxic to tissue cells that the antibiotic cannot be given parenterally and its utilization is completely limited to topical application

The combined gramicidin and tyrocidin preparation exhibits antibiotic activity against pneumococci streptococci *C. diphtheriae* staphylococci anaerobic streptococci beta hemolytic streptococci and anaerobic bacilli

The antibacterial activity of tyrothricin is more rapid than that of penicillin It is unimpaired by the presence of tissue extract or necrotic tissue

Antitherapeutic Devices

While tyrothricin is toxic when given parenterally local administration is without inherent toxicity So far as has been determined bacterial resistance does not develop and hypersensitivities are exceedingly rare

Therapeutics

Tyrothricin and bacitracin (p 4247) represent antibiotic preparations of choice for local and topical application Between them they take care of most organisms that tend to infect wounds of skin and mucous surfaces They are not particularly active sensitizing antigens and if sensitization does occur it does not preclude use of antibiotics in systemic infections when the need is greater For this reason they are preferred to sulfonamide penicillin streptomycin and aureomycin ointment or dressings for local and topical application

Toxicity

Introduced parenterally tyrothricin is capable of damage to circulating blood and kidneys In consequence parenteral administration is strictly contraindicated Intranasal applications may cause anosmia

UNCINARIASIS

[Hookworm Disease Ancylostomiasis Miner's anemia Tunnel Worker's Anemia Tropical or Egyptian Chlorosis]

Principles of Diagnosis and Therapy

1 Establish diagnosis through identification of ova in stools (Fig 1099 p 3730) If necessary concentrate specimen by zinc sulfate flotation method (p 3731)

sists for only six to eight months so that 'booster' doses of 1 cc are required every six months while there is danger of infection

2 Individual prophylaxis also is accomplished by use of insecticides (p 4373) particularly DDT aerosol bombs and by ratcides on the premises (p 4374)

Immediate Care

1 If possible remove patient to hospital equipped for care of infectious disease Under any circumstances institute generic care for treatment of the infected patient (pp 68-73)

2 Order a priming dose of 3 to 7 gm of aureomycin or chloramphenicol (approximately 50 to 100 mg per kilo for the average adult weighing 150 lbs)

3 If stomach is intolerant or the patient is comatose or otherwise unable to swallow instill antibiotic transduodenally or rectally or inject intravenously 100 mg of aureomycin hydrochloride and repeat every three hours until the patient is able to ingest medication

Continuing Care (Favorable Course)

1 Maintain antibiotic levels by giving 3 to 4 gm every twenty four hours divided into four equal doses

2 Continue antibiotic treatment until patient has been afebrile for at least three or four days The dose may then be halved for another period of three or four days

Continuing Care (Unfavorable Course)

1 If stomach is intolerant to aureomycin substitute chloramphenicol in the same dosage or terramycin

2 If patient can tolerate neither antibiotic and aureomycin hydrochloride is not available for intravenous use substitute the less effective para aminobenzoic acid Give an initial priming dose of 4 to 8 gm with b c s bonate of soda Continue with maintenance dose of 2 gm at 2 hour intervals day and night until the patient has been afebrile for at least forty eight hours (p 4445)

3 Typhus antirickettsial serum never officially approved or commercially available is obsolete

TYROTHRICIN

Tyrothricin is an antibiotic agent extracted from cultures of *B. brevis* a soil organism

Available Products

Tyrothricin (Parke Davis) 2% solution in 10 cc vials

Tyrothricin Concentrate (Sharp & Dohme) 2.5% solution in 10 and 20 cc vials

Tyroderm (Tyrothricin) Cream (Sharp & Dohme)

of infections. Unfortunately there is potential toxicity including nausea, vomiting, convulsions, coma, and on occasions fatality.

5. Excessively toxic and relatively ineffectual are beta naphthol, carbonyl tetrachloride, thymol, and santonin.

URETHRITIS NON SPECIFIC NON GONOCOCCIC

Principles of Diagnosis and Treatment

1. There is every justification for the practitioner to regard all instances of urethritis as of gonorrheal origin until the contrary is proven (p. 4349).

2. Nevertheless, in our experience, non specific or non gonococcic urethritis is encountered with some frequency in private practice. A grave injustice may be done by an attitude which insists that urethral infection implies sexual exposure (p. 2336).

3. The etiology of non specific urethritis is presently unknown. There is general agreement that it may occur as part of the syndromes presently grouped as erythema multiforme exudativum (p. 4323). These latter are all probable variants of the same disease entity.

4. Non specific non gonococcic urethritis may exist with and without other manifestations in the nature of cutaneous rashes or other mucosal disturbances (Reiter's syndrome, Stevens-Johnson disease, etc. p. 4323).

5. When non specific non gonococcic urethritis is encountered, the physician's first obligation is to assure the patient of the non venereal nature of the disease. Then it is necessary to state that specific therapy may be quite ineffectual since the etiologic agent, whatever it may be, does not respond to penicillin, sulfonamide, or any other preparation to which gram negative *Neisseria* ordinarily succumb.

6. Probatory anti-infective therapy may be attempted using streptomycin in intramuscular injections of 0.5 to 1 gm. twice daily for a few days. This failing, aureomycin and chloramphenicol merit clinical testing.

7. Despite assurance as to the non venereal nature of non specific urethritis, request patient to return after six weeks and again after three months for serologic tests for syphilis (p. 337).

URINARY ANTISEPTICS

The problem of urinary antiseptics has been simplified through introduction of highly potent antibiotics of negligible toxicity. These replace relatively feeble agents, many of which were capable of producing serious untoward reactions.

2 Look for evidences of extra intestinal complications including ground itch on soles of feet anemia eosinophilia respiratory signs (fox hole cough) and gastro intestinal disturbances (thickening and prominence of the mucous membranes of duodenum jejunum and ileum producing various digestive disorders)

Practical Management

Prophylaxis

1 Avoid penetration of eggs through soles of feet by use of shoes at all times

2 Insist on hand washing after urination and evacuation and again before ingestion of food

Immediate Care

1 If there is associated ascariasis (p 4240) use preliminary hexylresorcinol Give 1 gm in hard gelatin capsules while fasting Avoid food for four hours Then purge with 30 to 45 gm sodium sulfate in at least 1 pint of water

This will prove effectual against ascariasis and will relieve patient of 50 to 60% of Necator and 20 to 30% of Ancylostoma

2 If patient does not suffer simultaneously from ascariasis use tetrachlorethylene as preparation of choice While most observers insist on a period of preparation in which alcohol cream butter and fat are avoided the United States Public Health Service does not believe that this preliminary diet is necessary nor is preliminary purgation insisted upon Order 3 to 4 cc of tetrachlorethylene in hard gelatin capsules After two to three hours follow with 30 to 45 gm sodium sulfate in at least a pint of water Tetrachlorethylene is successful in ridding stools of Necator in 80 per cent of instances but the same are only 25 per cent of successes with Ancylostomas

Continuing Care (Unfavorable Course)

1 Hexylresorcinol may be repeated twice at weekly intervals if necessary

2 Provided that it does not cause undue exhilaration or depression tetrachlorethylene may be repeated once at an interval of seven days if necessary

3 Irrespective of anthelmintic used hematincs or transfusions are required if erythrocytes fall below 3.5 million or the hemoglobin reads less than 10 gm

4 With persistence of symptoms and failure of hexylresorcinol and tetrachlorethylene oil of chenopodium merits trial The patient is prepared as for tetrachlorethylene therapy The next morning on an empty stomach 0.5 cc of oil of chenopodium is administered orally in hard gelatin capsules The dose is repeated at half hour intervals for three doses to total 1.5 cc After two or three hours a saline purge is administered Chenopodium therapy is effectual in 70 to 90 per cent

URINARY ANTISEPTICS (Continued)

NU 445

See ganturim.

Penicillin NNR

Effective only against gram negative and gram positive cocci. Not effective against usual gram negative bacillary invaders. Prefer aureomycin, chloramphenicol, streptomycin, sulfonamide and salts of mandelic acid.

Pyridium

(Merck)

Feeble urinary antiseptic with slight analgesic effect on urogenital mucosa. Chemically phenyl 5-diamino pyridine hydrochloride. Commercially available as pyridium tablets 0.1 gm. Not comparable to aureomycin, chloramphenicol, sulfonamide, streptomycin or salts of mandelic acid.

Serenium

(Squibb)

An organic azo dye available in chocolate coated tablets of 1 gm. Serenium is a mild urinary antiseptic which colors the urine red. It is non-toxic and non-irritant and is equally effective in acid and alkaline urines. However, it does not compare in efficacy with aureomycin, chloramphenicol, sulfonamide, streptomycin or salts of mandelic acid.

Sulfonamide

Soluble sulfonamides effective against gram negative bacillary invaders. More toxic than aureomycin, chloramphenicol or salts of mandelic acid.

Terramycin

(Pfizer)

Antibiotic comparable to aureomycin and chloramphenicol.

URINARY SYSTEM NEOPLASMS OF

Neoplasms of the urinary system are most frequently encountered in bladder and kidneys (pp 2322 and 2326). With relatively slight discomfort to the patient, the skillful urologist (using direct and indirect methods of visualization) has facilities for making early diagnosis with remarkable exactitude.

Employing electrocoagulation for bladder neoplasms and nephrectomy for those involving the kidney, the urologist obtains a high percentage of radical cures with minimum risk provided that the patient is referred when the lesion is subjectively asymptomatic and the most prominent objective finding is persistent microscopic hematuria (p 2306).

TUMORS OF THE URINARY BLADDER AND KIDNEYS

Practical Management

1. During routine examination, note enlargement of kidney (p 2230), microscopic hematuria (p 2306) or persistent pyuria (p 2352).

URINARY ANTISEPTICS

Acridflavin N F

(Abbott National Aniline)

Acridine derivative obtained from coal tar available in official tablets troches and ointments and in powder for preparation of aqueous solutions. Only feebly antiseptic in an alkaline urine now obsolete yielding to chloramphenicol aureomycin and sulfonamides

Aureomycin N N R

(Lederle)

Potent antibiotic effective orally against broad bacterial spectrum including gram negative and gram positive cocci and bacilli with chloramphenicol preparation of choice

Chloramphenicol N N R

(Chloromycetin Parke Davis)

Chloromycetin N N R

(Parke Davis)

Preparation of choice with aureomycin, probably preferable against gram negative bacilli

Dihydrostreptomycin N N R

(Merck)

As streptomycin effective but potentially toxic yield preference to aureomycin and chloramphenicol

Gantrisin (NU 445)

(Hoffman La Roche)

A soluble sulfonamide rapidly excreted to produce high urinary concentrations. Subject to same criticism as other sulfonamides but to lesser degree. Prefer less toxic preparations particularly aureomycin and chloramphenicol

Hexylresorcinol (Caprokol)

(Sharp & Dohme)

Official but feeble urinary antiseptic not comparable to aureomycin and chloramphenicol

Mandelic Acid N F

(Merck Mellinckrodt)

Useful urinary antiseptic in infections due to microbes unable to thrive in an acid urine. Especially effective against *E. coli*, *Streptococcus fecalis*, *Staphylococcus aureus*, *Aerobacter aerogenes*, *Aerobacter alkaligenes*, *Salmonellae* and *Shigellae*. For practical use prefer salts of mandelic acid particularly calcium mandelate tablets 0.5 gm. (Burroughs Wellcome). For adult dose give 6 tablets four times daily with water intake limited to 1000 cc. Maintain urinary acidity at 5.3 or less using chlorphenol red test papers for guidance

Methenamine (Hexamethylamine Urotropin) USP

(Abbott Merck Merrell Schering)

Feebly effective in acid medium not comparable to aureomycin, chloramphenicol and salts of mandelic acid

Neomycin

As streptomycin

CLINICAL MANIFESTATIONS AND DIAGNOSTIC FEATURES (Continued)

Alkaptonuria (Continued)

Alkaptonuria is a rare laboratory finding due to the presence of homogentisic acid in urine. Usually it exists as a harmless anomaly of intermediate protein metabolism. It is more common in males and is apparently congenital, occurring most often in families that are narrowly inbred.

Infrequently, alkaptonuria is associated with ochronosis (p. 3243). Under these circumstances, cartilaginous, ligamentous and fibrous structures (most apparent in ears, corneas and tracheal rings) appear blackened. Additionally, patients with ochronosis frequently suffer from skeletal disturbances and urolithiasis (p. 2311). Each of these complaints is attributable to deposition of abnormal pigmentary material whose presence in blood also causes a false positive Wassermann reaction (p. 337).

Patients with asymptomatic alkaptonuria require no treatment. Those with ochronosis are placed on high carbohydrate feedings (p. 671), intramuscular injections of liver extract (p. 1048) and oral supplementation with ascorbic acid (p. 1049) in an attempt to rid urine of the abnormal intermediate product.

Melanuria

Urine darkens on standing; addition of ferric chloride produces gray to black precipitate; addition of bromine water gives yellow to black precipitate.

Melanuria may accompany any condition in which there is widespread destruction of protein. Its presence additionally, however, suggests the possibility of a melanotic tumor; hence a careful survey is distinctly indicated since pigmented neoplasms are often of a high degree of malignancy (pp. 1563, 3221, 3225, 3275, 3297 and 3454).

In rare instances melanuria and ochronosis are observed as a result of exposure to carbonic acid in a wet dressing or as an occupational hazard (p. 4068). Except for cessation of exposure to phenol and excision or destruction of melanotic tumors, melanuria requires no treatment.

Porphyrinuria

Urine darkens on exposure to light; forms red compound with Ehrlich aldehyde test; identification requires spectroscopy.

Porphyrinuria is a constitutional error in metabolism. The porphyrins are substituted tetrapyrroliethenes. Coproporphyrin is present normally in urine and stool; its excretion is increased in a variety of pathologic conditions including lead poisoning, liver insufficiency and anemias. Symptomatic or secondary coproporphyrinurias are distinguished sharply from porphyrinurias in which the metabolic anomaly involves the excretion of uroporphyrin, whose identification is suggested by tests mentioned in the chart. Uroporphyrinurias may be encountered in congenital photosensitive and adult nonphotosensitive varieties.

Congenital photosensitive porphyria is an unusual and rare inborn error of metabolism. It is probably present at birth and is inherited as a recessive Mendelian characteristic. The arresting clinical manifestations of congenital porphyria first suggested by the appearance of the urine are essentially cutaneous, giving rise to the syndromes known as *hydra aestivale* (p. 3176) and *epidermolysis bullosa* (p. 3151).

Hydra aestivale is a rare congenital eruption that is observed during the summer months in childhood. In addition to evidences of urinary excretion of abnormal porphyrins, the youngster reveals vesicular and bullous lesions on exposed surfaces, particularly face and arm. Lesions tend to recur in spring and summer when exposure to sunlight is maximum. With healing of vesicles and blisters, progressive and increased scarring takes place. Eventually, unless protected from exposure to light, the child presents cicatricial deformities of fingers, eyelids, bridge of nose and tips of ears. Additional evidences of the generalized metabolic disorder are revealed in the teeth which take on a red or brownish hue (*erythrodonτία*). Later, as the child matures, enlarge-

- 2 Obtain a catheterized specimen for microscopic examination culture and guinea pig inoculation
- 3 Inquire as to dysuria (p 2325) or any change in urinary habits
- 4 In the presence of any positive findings obtain a 24 hour urine specimen Send to clinical pathologist for cytodiagnosis by Papanicolaou method
- 5 Obtain blood for serodiagnosis of malignancy (p 4431) and chest x ray especially for evidences of tuberculosis
- 6 Refer patient to urologist for cystoscopy (Fig 555 p 2324)
- 7 Request urologist to obtain biopsy specimen if possible
- 8 On positive proof of bladder neoplasm discuss electrocoagulation with urologist before consideration of radical resection of the viscus
- 9 On suspicion of supravescical lesion complete survey of urinary tract with catheterization of ureters examination of differential specimens obtained from each kidney and retrograde and intravenous pyelocystography
- 10 On suspicion of renal neoplasm consider exploratory observation of viscus
- 11 With definitive proof of neoplasm of kidney refer patient to urologic surgeon for resection or nephrectomy

URINE PIGMENTARY CHANGES IN

Passage of dark urine or a specimen which darkens on standing and exposure to air may connote the presence of serious metabolic disturbances ranging from jaundice to anomalies of intermediate protein metabolism

CLINICAL MANIFESTATIONS AND DIAGNOSTIC FEATURES

Pharmacologic

Following ingestion of rhubarb senna or cascara negative tests for bile pigment (p 3686) and other chromogens of coloration disappears when drug is discontinued

Concentration

From inadequate fluid intake or excessive fluid loss through excretory channels other than the kidneys (vomiting diarrhea hemorrhage) pigmentary tests negative disappears with adequate hydration

Bile pigment

Yellow discoloration of foam after shaking play of colors when layered with concentrated nitric acid (p 3686)

Alkaptonuria

Urine turns brown to black on standing stains linen after alkalinization foam is luminous in a dark room addition of alkali produces black precipitate and discolors sensitized photographic paper addition of dilute ferric chloride gives transitory blue discoloration

The management of the allergic hyper sensitivities requires initial palliation with adrenergics and antihistamines (p 4212) Later in the free interval between attacks strive to recognize and eliminate the sensitizing modality (p 4175) Attempt desensitization by physio or psycho-therapy and provide prophylaxis with antihistamines or adrenergics (p 4158) With persistent or menacing lesions (angioneurotic edema of tongue uvula or larynx) apply for cortone or ACTH (p 4145)

VACCINIA

[Cowpox]

General Principles of Diagnosis and Therapy

1 The value of artificially produced vaccinia in protection against smallpox has been amply demonstrated since Jenner's first observation in 1798 (p 428 Fig 69 pp 430 and 431)

2 Recent attention has been drawn to the disturbing syndrome of postvaccinal encephalomyelitis (p 433) more properly termed an encephalomyelopathy since it is unlikely that pathologic manifestations are the result of infection

3 The syndrome of postvaccinal encephalomyelopathy is most likely a manifestation of hyper sensitivity (p 4307) In Belgium Van Bogaert observed sixteen instances with three fatalities over a span of eighteen years

4 Although the Antitherapeutic Complication (p 4135) is of relatively low incidence its gravity is great More deaths occurred in the 1948 New York City experience for example from postvaccinal encephalomyelopathy than from smallpox itself This statement must not be taken out of text by antivaccinationists since it must be apparent that without prophylactic immunization many citizens of the city and indeed of the country as a whole might have succumbed to the infection

5 The gravity of encephalopathy with its mortality rate of 30 to 40 per cent and its crippling sequels appears sufficient to merit routine use of antihistamine beginning immediately after vaccination and continuing for a period of at least three weeks thereafter The manifestations of encephalopathy quite regularly develop between the seventh and fourteenth days after inoculation Prolongation of administration of antihistamine for an additional week would appear completely justified

6 In active treatment of encephalomyelopathy antihistamine may be given parenterally as 1% benadryl using 5 cc (50 mg) intramuscularly or intravenously every three or four hours as needed Simultaneously application should be made for cortone (Merck) or ACTH (p 4146) since the high mortality of the complication certainly warrants use of even limited supplies of these important therapeutic agents

CLINICAL MANIFESTATIONS AND DIAGNOSTIC FEATURES (Continued)

Porphyria (Continued)

ment of liver and spleen may be noted as well as masculinization in the female. Pigmentary deposits occur also in bones and during life the same may be detected by strong transillumination.

Epidermolysis bullosa resembles hydroa aestivale in that it is likewise a metabolic disturbance of porphyrins. In its simplest form, blebs appear at sites of irritation or injury (Fig 891 p 3159). When these blebs rupture and heal there is residual pigmentation but neither scarring nor deformity.

A dystrophic variety of epidermolysis bullosa is characterized by hemorrhagic blebs over points of pressure particularly involving hands, elbows, knees and feet. With these there may be mucosal lesions particularly in the mouth. Healing of hemorrhagic blebs may be associated with severe scarring so that joint function often is impaired.

Adult non photosensitive porphyria is observed twice as frequently in the male and usually does not become manifest until after the second or third decades. Unlike photosensitive porphyrias whose manifestations are cutaneous, the adult non photosensitive form produces its primary effect on the nervous system and abdominal viscera.

The clinical manifestations of adult non photosensitive porphyria are bizarre. The variety of neurologic manifestations is bewildering and may include nervousness, easy fatigue, conduct disorders, frank psychoses, usually of the manic depressive variety, delirium, coma, epileptiform convulsions, paralysis of cranial or peripheral nerves with secondary muscle atrophy and contractures, etc. The distribution of lesions is widespread and patchy.

To complicate the bizarre neurologic manifestations of adult non photosensitive porphyria there are often associated visceral manifestations which may become apparent through attacks of pain in abdomen or loins with disturbances of bowel function ranging from obstinate constipation to intractable diarrhea. The diagnosis of the adult non photosensitive varieties of porphyrias becomes obvious only when urine examinations reveal the pathognomonic features of uroporphyrinuria. Adult non photosensitive varieties of porphyria have a favorable prognosis which unfortunately is not shared by photosensitive syndromes. The latter have a high mortality rate approximating 80 per cent within five years of onset of symptoms. Although authorities have little confidence in therapeutic measures, the grave prognosis of youthful photosensitive varieties of porphyria requires that the practitioner make every effort to protect his patient.

By means of clothing or solar protective lotions and ointments (p 3140) exposure to light is strictly avoided. On the basis that the disturbance may be an allergic hypersensitivity reaction to solar energy, prescribe antihistamines (p 4212). Additionally because of the ominous prognosis of youthful forms, apply for cortisone or ACTH on a probatory and experimental basis. Symptomatic reduction of porphyria has been reputed to follow intravenous injections of calcium (p 603), intramuscular injections of liver extract (p 1049), ingestion of a high carbohydrate diet (p 672) and supplementary additions of niacin (p 625) and ascorbic acid (p 1049).

URTICARIA AND ANGIONEUROTIC EDEMA

Urticarias and attacks of the more alarming angioneurotic edema occur with great frequency in private practice (Fig 984 p 3347). In many instances these dermatoses are representations of psychogenic allergy. Again they may result from exposure to heterologous serum digestants, drugs and physical agents.

Peru to avoid infection by descending below an altitude of 2 000 feet or ascending above 9 000 feet to spend the night. If it is necessary to spend the night in an infected area a reasonable security against infection can be obtained by screening (Pinkerton in Cecil's Textbook of Medicine 7th Ed p 100)

2 Individual prophylaxis also may be accomplished by use of insecticide, particularly DDT aerosol bombs (p 4373)

Immediate Care

1 Excellent results are reported from administration of streptomycin to patients in the evolutionary phase of acute progressive anemia (Carnion's disease) and in the phase of the verruca eruption. There was immediate improvement of severe anemia and clinical cure by the end of treatment. Bartonella disappeared from peripheral blood within the first three to five days of treatment and there was rapid regression of verrucal lesions. Penicillin also appears to produce good results in halting the course of bartonella anemia. Although no clinical reports are currently available it would appear wise to supplement streptomycin therapy with daily deposits of 300 000 to 600 000 units of procaine penicillin G in aqueous suspension or oil.

2 The bactericidal action exhibited by streptomycin is not found in arsenicals, sulfonamides or para-aminobenzoic acid.

3 Presumably if streptomycin is effective probatory therapy with aureomycin or chloramphenicol merits trial because of lesser toxicity and greater ease of administration of these more recently developed antibiotics.

4 In addition to antibiotic therapy patients with acute progressive anemia are entitled to oral administration of iron (p 1048), intramuscular injections of liver extract (p 1048) and whole blood transfusions (p 3778) where indicated.

VIRUS DISEASES

Virus diseases which do not occur often or are as yet encountered only in animals are tabulated below.

| Virus or Disease | Occurrence | Symptoms | Treatment |
|---------------------------|--|--|---|
| Bunyamwera virus | Healthy inhabitants of Uganda | Not yet observed as clinical disease | Aureomycin/chloramphenicol will merit trial |
| Ewamba fever | Uganda | Fever, headache, generalized pain, conjunctivitis, generalized dermatosis. | Symptomatic |
| Chikungunya (= Reeves) | In <i>Aedes dorsalis</i> and <i>Culex tarsalis</i> | Clinical disease not described | |

VENEZUELAN EQUINE ENCEPHALITIS

General Principles of Diagnosis and Therapy

1 Venezuelan equine encephalitis is primarily a viremia of horses and mules. However, it may be transmitted to humans by a mosquito vector producing a mild clinical syndrome.

2 In the prodromal phase human patients complain of manifestations resembling influenza with mild headache and fever. Later they develop intestinal disturbances, tremors, myalgias, diplopia and lethargy.

3 After three to five days symptoms and signs abate and the patient makes a prompt and complete recovery.

4 Neutralizing antibody is found in the blood of recovered patients as well as in many who give no history of having had the disease.

5 A formalin inactivated vaccine has been prepared from infected chick embryos. This has been used in Venezuela for prevention of the disease in horses and might possibly prove useful if a human epidemic broke out.

VERNAL CONJUNCTIVITIS

Principles of Diagnosis and Therapy

1 Regard vernal conjunctivitis as an acute histamine type hypersensitivity (Fig. 331 p. 1650).

2 Avoid antibiotics particularly hyperallergens such as sulfonamides locally or systemically.

3 Prescribe antihistamines orally (pyribenzamine or benadryl 200 mg daily) and antistine 0.5% ophthalmic solution locally.

VERRUGA PERUANA

[Oroya Fever, Carrion's Disease, Bartonellosis]

General Principles of Diagnosis and Therapy

1 Verruga peruana is a specific disease caused by a minute rickettsial like microorganism, *Bartonella bacilliformis* (Fig. 60 p. 385).

2 The vector is probably the sandfly.

3 In laboratory experiments streptomycin has a potent bactericidal action on the invading microbe.

Practical Management

Prophylaxis

1 Since the sandfly does not emerge from the rocky caves in which it lives until after dark, it is possible for visitors in the infected areas to

VIRUS HEPATITIS

[Catarrhal Jaundice Infectious Hepatitis Epidemic Hepatitis]

General Principles of Diagnosis and Therapy

1 The term virus hepatitis is preferred to that of catarrhal jaundice previously employed (p 1979) It clearly indicates the etiologic agent and hence is more meaningful than the descriptive terms catarrhal and jaundice

2 Of the varieties of infectious jaundice virus hepatitis is most commonly encountered by the practitioner Spirochetal hepatitis (Weil's disease) is exceedingly rare in civilized communities (p 4527) and homologous serum jaundice (clearly differentiated by the history of antecedent transfusion plasma infusion or inoculation with yellow fever vaccine) soon may be eliminated by irradiation of biologicals intended for parenteral use (p 4358)

3 Experiments on human volunteers indicate that the incubation period of virus hepatitis averages twenty five days the pre icteric phase five days the icteric phase an average of four weeks with persistence for ten weeks and even several months in extreme instances

4 More frequently than was previously suspected virus hepatitis terminates in hypertrophic cirrhosis In a few instances carcinomatous change also has been noted

5 A virulent variety of virus hepatitis has been reported from Denmark It occurs primarily in women after the menopause and has a fatality rate approximating 50 per cent with terminal anasarca and ascites

6 To the best of current knowledge the virus producing epidemic hepatitis is not susceptible to any known antibiotic Protective antibody however is present in gamma globulin

Practical Management

Prophylaxis

1 The high rate of infectivity of virus hepatitis and the prolonged period of incubation indicate the wisdom of protecting all contacts by injection of gamma globulin using 0.06 to 0.12 cc per pound of body weight (approximately 10 cc intramuscularly for the average adult weighing 150 pounds) Gamma globulin insures protection if given before the sixth day preceding onset of the pre icteric phase Immunity persists for six to eight weeks

2 Since the disease is quite likely stool borne attention to personal hygiene of patient and contacts is essential to interruption of the infectious cycle All should be cautioned to wash hands thoroughly after stool and before food handling

Immediate Care

1 If the patient is seen in the pre icteric phase of the disease and gamma globulin is readily available try to modify the course by intra

| Virus or Disease | Occurrence | Symptoms | Treatment |
|--|--|--|---|
| Coxsackie (Dall-dorf) virus disease | New England | Fever headache nausea stiffness of neck pain drowsiness sore throat positive Brudzinski or Kernig sign | Try aureomycin and chloramphenicol |
| Fort Bragg fever (prethibial fever) | Texas | Pain fever unusual eruption of 2 to 5 cm blotches usually on prethibial areas relative leukopenia | Symptomatic |
| Infectious anemia of horses | Specific viremia of horses occasionally transmitted to man | Fever anemia pain diarrhea | Aureomycin/chloramphenicol merit trial |
| Ovine pustular dermatitis | Specific disease of sheep occasionally transferred to man | Vesiculopustular eruption headache lymphadenitis | Symptomatic |
| Ovine encephalomyelitis (louping ill) | Disease of sheep occasionally transmitted to man | Fever encephalomyelitic manifestations | Prophylaxis by tick control Aureomycin/chloramphenicol merit trial |
| Rift valley fever (enzootic hepatitis) | Acute viremia of sheep occasionally transferred to man | Fever pain in extremities and joint leukopenia | Symptomatic |
| Swineherd's disease | In young adult farm hands | Gastroenteritis meningel irritation maculopapular eruption | Aureomycin/chloramphenicol merit trial |

VIRUS DYSENTERY

[Epidemic Nausea Vomiting and Diarrhea Epidemic Dysentery]

General Principles of Diagnosis and Therapy

1 Epidemic of gastroenteritis have been reported from several localities in which the usual causative organisms (*Salmonellae* and *Shigellae*) have not been demonstrable

2 In place various investigators have isolated one or more filtrable infectious agents Epidemic gastroenteritis a specific infectious disease was found to be the most common diarrhea in New York State in 1946 and 1947

3 At present there are no specific laboratory aids to diagnosis The disease is self limited and requires only symptomatic therapy

3 Virus pneumonitis runs a completely atypical course although eventual recovery is the rule

4 The specific pneumonitis virus is insensitive to penicillin sulfonamide and streptomycin. It reveals striking sensitivity both to aureomycin and chloramphenicol

Practical Management

Immediate Care

1 Prescribe a priming dose of aureomycin or chloramphenicol approximating 25 mg per kilogram of body weight for the former (3.5 gm for average adult weighing 150 pounds) and 50 mg per kilogram for latter (7 gm). To lessen gastric irritation suggest that patient swallow 2 products every few minutes well diluted with milk, tea, ice cream, fruit juice, soup or cream cheese

2 Institute non specific therapy for management of infected patient (p 67)

3 Warn contacts of high infectivity of disease. Have nurses and other attendants mask while in immediate vicinity of patient

4 Avoid symptomatic drug treatment if possible. Analgesic antipyretics may increase gastric irritability and opiates depress cough reflex favoring retention of secretion in bronchial passages. If pressed prescribe simplest expectorant (liquor ammonium anisatis 2 cc well diluted every two to three hours)

Continuing Care (Favorable Course)

1 Order daily maintenance doses of aureomycin or chloramphenicol. Of former 1 to 2 gm in 4 divided portions suffices for majority of infections. Of chloramphenicol use larger doses approximating 2 to 3 gm

2 Continue maintenance doses for several afebrile days to avoid relapse

Continuing Care (Unfavorable Course)

1 Double daily maintenance doses of antibiotics

2 If either antibiotic produces gastric irritation substitute other

3 If stomach is intolerant of both antibiotics consider intravenous injection of 100 mg of aureomycin using preparation labeled for intravenous use in diluent supplied by manufacturer

4 Supplement aureomycin/chloramphenicol with penicillin. Deposit priming intramuscular dose of 600,000 units of crystalline procaine penicillin G in aqueous suspension. Repeat after eight, twelve or twenty-four hour intervals as indicated

Continuing Care (Progressively Unfavorable Course)

1 If patient is restless, cyanotic, dyspneic or racked by cough inaugurate oxygen therapy by mask or tent (p 3827)

2 Maintain nutrition with concentrated high-calory diet chosen according to patient's taste (p 671)

muscular injection of at least double the prophylactic dose i.e. 20 cc deposited intramuscularly

2 In view of the possible length of incapacitation the long period of convalescence and the frequent incidence of late cirrhosis institute probatory anti infective therapy with aureomycin or chloramphenicol since these of all antibiotic agents have virucidal potential In view of the insensitvity of the virus give large doses approximating 4 to 6 gm daily

3 Contrary to previous advice use a high calory diet with the normal quota of fat

4 To prevent hepatic cell destruction start immediately to administer lipotropic principle Give syrup of choline dihydrogen citrate in doses of 8 to 12 cc daily or 2 to 4 capsules each containing 250 mg of choline

5 To prevent hemorrhagic disturbances administer vitamin K Give intramuscular injections of menadione 2.5 mg once or twice daily

Continuing Care (Favorable Course)

1 Continue routine for a period of no less than two and preferably three weeks Early resumption of activity and premature termination of bed rest increase the severity of symptoms favor recurrence and delay recovery

Continuing Care (Unfavorable Course)

1 With persistent vomiting and resultant dehydration and hypoproteinemia establish an intravenous drip Give daily 1000 cc of 5% dextrose in saline one or two units of plasma or of a protein hydrolysate 100 mg of thiamine hydrochloride 100 mg of ascorbic acid and 2.5 mg of menadione (p 4235)

2 Follow progress of disease by daily determinations of urinary urobilin and urobilinogen

VIRUS PNEUMONITIS

[Atypical Pneumonia]

Principles of Diagnosis and Therapy

1 Virus pneumonitis is a specific abacterial respiratory infection serologically characterized by production of cold hemagglutinins and streptococcus MG agglutinins These laboratory criteria provide the basis of a definitive subclassification of virus pneumonitis and distinguish it from other forms of acute pneumonitis (p 2185 and Fig 497 p 2187)

2 In private practice virus pneumonitis is the most frequently encountered infection of the pulmonary alveoli (p 2188) Army statistics confirm the previously expressed opinion that in proportion to lobar pneumonia virus pneumonitis is encountered 30 to 1

presently incompletely established but it probably involves jungle monkeys

2 The incubation period in human volunteers is three to six days following bite of infected vector

3 Severity of the disease varies from asymptomatic infections which are nevertheless immunizing to the classical clinical syndrome (p 478) carrying a mortality rate as high as 60 per cent

4 Laboratory diagnosis is established by isolation of virus requiring very special technique and development of virus neutralizing bodies in increasing titer

5 An attenuated chick embryo growth of virus has been harvested by the United States Public Health Service for prophylactic vaccination Omission of human serum has eliminated contaminating icterogenic organism of homologous serum jaundice (p 4358) which raised such havoc with the armed forces in World War II

Practical Management

Prophylaxis

1 Production of artificial active immunity by injection of 0.5 cc of vaccine only one inoculation is necessary

2 Following injection approximately 5 per cent of patients develop malaise headache and fever on the seventh day Immunity as determined by specific neutralizing bodies is manifested on the seventh to ninth days The duration of immunity is probably at least four years

3 Individual prophylaxis also can be accomplished by avoidance of mosquito bites through liberal use of insecticides (p 4373)

Immediate Care

1 Notify health authorities

2 Remove patient to a special hospital equipped for care of yellow fever if possible

3 Immunize all contacts

4 Suggest probatory anti-infective treatment with aureomycin or chloramphenicol which are demonstrably virucidal fortified with penicillin for possible synergistic activity

5 Inaugurate symptomatic therapy (pp 68-73) Suggest measures to prevent dehydration and hypoproteinemia Set up intravenous drip of 5% dextrose in sterile distilled water Add protein hydrolysates (p 4235) and plasma or whole blood if indicated

6 Prevent avitaminosis and bleeding tendency by addition to drip of soluble vitamins particularly K

7 Attempt to obtain human homologous convalescent serum for addition to intravenous drip or for intramuscular injection (p 4260)

3 Collect sputum Examine direct spreads for fungi (Fig 75 p 486 Fig 76 p 487) Use gram stain for predominant bacteria (p 52) and carbol fuchs \equiv stain for tubercle bacilli (p 52) Send specimen to clinical pathologist for repetition of tests cultures and animal inoculation Pneumonitis due to tubercle bacilli and fungi may closely \equiv imitate syndromes of acute or protracted virus pneumonitis

4 If course of disease continues unabated and other microbes in sputa are not demonstrable persist with combination of aureomycin/chloramphenicol and penicillin doubling and redoubling doses until recovery has been effected

VISCERAL ANGIITIS

Principles of Diagnosis and Therapy

- 1 Regard visceral angitis as a chronic tuberculin type hypersensitivity (p 4169) with predominant peripheral vascular lesions
- 2 Treat as atypical verrucous endocarditis (p 4311)

THE XIPHOSTERNAL CRUNCH

A crunching sound heard best over the lower sternum and the ensiform cartilage is noted in approximately one healthy man in five The xiphosternal crunch usually occurs during systole though it may accompany either heart sound Its intensity is slight in approximately half the patients examined moderate in \equiv little more than one third and quite marked in slightly more than one fifth The crunch is confined to sternal and ensiform regions in slightly less than one fifth of all observations it is transmitted to the left in slightly more than four fifths being heard as far as the apex in an occasional instance

The xiphosternal crunch bears no relationship to cardiac disease general development or pulse rate It has no pathologic significance Its importance lies in its recognition as a mere acoustic phenomenon which must not be mistaken for an organic cardiac murmur (p 973) or a pericardial friction rub (p 3549)

YELLOW FEVER

[Virus Amaril Fievre Jaune Gelbes Fieber Jungle Yellow Fever]

Principles of Diagnosis and Treatment

- 1 Yellow fever is a viremia In urban yellow fever the vector is a mosquito *Aedes aegypti* in jungle yellow fever the virus cycle is

INDEXES

An Integrated Practice of Medicine

| | |
|---|------|
| Index of Signs and Symptoms (Volumes I to V) | 4643 |
| General Subject Index (Volumes I to IV) | 4661 |
| Index of Illustrations (Volumes I to V) | 4827 |
| Index to the Progress Volume (Volume V) | 4847 |

INDEX OF DIFFERENTIAL DIAGNOSIS BY MAIN PRESENTING SIGNS AND SYMPTOMS

NOTE The page number given after each symptom leads to the table containing diseases or conditions from which the symptom in question can be differentiated

A bold face page number indicates that an entire table is concerned with the symptom a page other than boldface indicates discussion within the tables

- ABDOMEN** ascites 1921 See also *Abdomen*,
swelling
 cramps 1878
 dermatoses of 3368
 distention 1878
 enlargement of liver 1973
 flatulence 1878
 fluid in, 1921
 gaseous distention, 1878
 hepatomegaly 1973
 hypogastrium, pain in, 2302
 swellings 2621
 tumors 2621
 liver enlargement 1973
 meteorism 1878
 obstruction 188
 pain, epigastric, 1788
 in food poisonings 240
 generalized, 1748
 in infancy and childhood, 2730
 hypogastric, 2302
 in left lower quadrant, 1886
 in left upper quadrant, 1942
 in pregnancy 2662
 in right lower quadrant, 1880
 in right upper quadrant 1959
 in umbilical region, 1887
 rash generalized, 172
 reflexes 3357
 rigidity 1746
 skin atrophy of 3407
 swelling epigastric 1814
 generalized due to solid tumors 1750
 in hypogastrium 621
 in left lower quadrant, 1870
 in left upper quadrant, 1849
 in right lower quadrant, 1886
 in right upper quadrant, 1957
 tumors in left lower quadrant, 1870
 in left upper quadrant, 1849
 in right lower quadrant 1886
 in right upper quadrant, 1957
 tympanites, 1878
 wall disturbances 3556
 involuntary rigidity 1746
- ABORTION**, 2442
- ABSCESS** brain, 1429
 lung 2215
 throat, 3600
- ACHILLES** reflex, 3534
- ACHONDROPLASIA**, 2729 2798
- ACHROMATOPASIA**, 1635
- ACIDOSIS** 721
- ACNE** 368 3334 3368
 Acromegaly 1155 298
 Acroparesthesia, 3 14 3750 3290
 Acuity of hearing decreased 2019
 increased 2096
 Addison's disease 700 719 917 1673
 skin color in, 3 4
 Adipos dolorosa, 695 1135
 Adiposity 695
 Adiposo-genital dystrophy 1155
 Afebrile skin eruptions 175
 After pains, 2663
 Agalactia 2578
 Agranulocytosis oral signs 1677
 Albism 3404
 Albuminuria, 2370
 Alkalosis 722
 Alkaptonuria, 3677
 Allergy oral signs 1669
 Alopecia, 3439
 Alt mating pulse 3581
 Amaurosis 1638
 Amblyopia, 1638
 Amenorrhea, 2618
 Anasarca, 717 See also *Edema*.
 Androgen-estrogen ratio dislocation of 2481
 Anemias 1038
 hemolytic 1061
 of infancy and childhood 1037
 oral signs 1676
 of pregnancy 1089
 skin color in, 3742
 Angina pectoris 832
 Angroid streaks 1391
 Anophthalmic edema, oral signs 1670
 Anhydremia, 704
 Ankle dislocation 2977
 jerk 3534
 rash generalized 172
 Ankylosis of joints 2310
 Anoprietal pain, 1913
 Anorexia, 1779
 Anosmia, 210
 Anterior pituitary dysfunction 1150
 Cushing's syndrome 1163
 Anuria, 2232
 Anus itching 1916 3415
 pain in, 1913
 Aortic lesions 994
 Aortic impulse abnormal ties 3528 3534
 Aphasia, 3587
 Apnea, 2014
 Appetite, excessive 1776

- Brain thrombosis, 1437
 Breast See also *Chest wall*
 disturbances, 2578
 male hypertrophy in, 2 78
 Paget's disease 3382
 pain 892, 2080
 Breath odors 1660
 an abscess 2215
 shortness of 2016
 sounds 3542
 Breathing abnormalities 3542
 cessation of 2014
 depression of 2014
 difficult 2016
 increased 2016
 noisy in infancy 2 32
 Bronchial breathing 3542
 Bronchovesicular breathing 3542
 Bruises 3422
 Bruits 973
 Bubo 3002
 Buccal mucosa, depigmentation in, 3404
 exanthems 1668
 Bulging of precordium, 3528
 Bulimia, 1776
 Bullae 1668 3334
 Burgundy stools 1843
 Burning sensation of face 3266
 Burping 1983
 Bursae inflammation 19 2811
 Buttocks dermatoses of 3368
 Buzzing in ear 2141
- CACHEXIA, 700
 Cacosmia 2190
 Calcium decrease in blood and serum, 7 1
 increase in blood and serum 723
 Calluses 3296
 Calves deformities painless 2896
 p in in, 868
 swellings painless 2826
 t enderness in, 2863
 Capillary dilatation, 3394
 pulse 3581
 Caput succedaneum 2774
 Cardiac See also *Heart*
 disorders associated with fever 1006
 congenital, 964
 hypertrophy 863
 murmurs 973
 pain 892
 rate in reased, 875
 slowed 877
 sounds alterations 778
 Carotids inequality 3516
 s nus syndrome 917
 throbbing 3516
 Casts in urine 2370
 Cavernous breathing 3542
 Celiac syndrome 2782
 Cell count abnormal in bone marrow 1043
 Cephalgia, 1515
 Cephalhematoma, 2774
 Cerebral arteriosclerosis 1428
 circulation abnormalities 1437
 Cerebrospinal fluid abnormalities 2735
 Cerebrum disturbances 1423
 infections, 1463
- Cervical lymphadenopathy 3518
 spine disturbances 813
 Chaner 90
 Chappin 3 766 3 96
 Clecks dermatoses 3383
 Chemical poisoning 75
 Chemosis 16 7
 Chest barrel 3 3
 claken 3 3
 chylothorax 203
 dermatoses 3363 3383
 empyema thoracis 2032
 fluid in 2032
 hemothorax, 2032
 hydropneumothorax, 2035
 hydrothorax 2032
 pain in 892 2080 2240
 pleural effusion 2032
 pneumothorax 2035
 pyopneumothorax, 2035
 py thorax 2032
 rash 3368, 3383
 with fever 172
 thoracic cage abnormalities 35 3
 wall, abnormalities by auscultation, 35 1
 of palpation 35 4
 by percussion 35 38
 visible 35 23
 Cheyne-Stokes respiration 2018
 Chicken chest 3523
 Chickenpox, 423
 rash in 1 3
 Chills 3296
 Chills 32
 Chin eruption 3457
 Chloride alteration in blood and serum 732
 Choked disk 1579
 Cholesterol decreased blood content, 738
 increased blood content 738
 Chordee 2453
 Chorea Huntington's 1333
 Choreiform movements of muscle, 2882 2883
 Cholel rupture 1571
 Chromatopsia, 1535
 Chyliform fluid in chest 2032
 Chylothorax 2032
 Cretasies of skin 3218
 Calvary injection of eye 1524
 Circulation cerebral abnormalities of 1437
 disturbances, fever in, 1006
 mechanical 963
 systemic disorder 954
 Cirrhosis biliary 1975
 portal 1975
 Claudication 3496
 intermittent 2868
 Clavus 3296
 Clits of skin 3218
 Clumacteric premature in female 2480
 in male 2480
 Clubbed fingers 2061 2378
 tor 2878
 Cogwheel breathing 354
 Corn sound, 3538
 Cope 1738
 renal 2274
 Colon consciousness 185
 Color blindness 1535
 sense perversions, 1535

- Appetite loss of 1779
 perverted 1776
 Arcus senilis 1591
 Argyll Robertson pupil 1531
 Arguria 3212
 Arm(s) deformities 2954
 dermatoses 3155 3378
 in eruptive fevers 172
 dislocation 2971
 pain in 2893
 pt enlargement of lymph nodes 3,22
 swellings painless 2951
 Arteriosclerosis cerebral 1408
 Ascites 1921
 Astasia 3196
 Asthenia 2890
 Asymmetry of chest wall 3523
 Ataxia 3585
 Atrophy of breast 2578
 of muscle 2880
 optic 1571
 of skin 3402
 Auditory canal dermatoses 2118
 disturbances 3008
 Aura in epilepsy 1515
 in migraine 1507
 Aural discharge 2180
 Auto-intoxication 1852
 Axilla dermatoses 32,3
 Axillary lymphadenopathy 3,26
 rash in eruptive fevers 172
 ringworm 3179
 Azotemia 2276
- Babinski talk 3596
 Babinski reflex 3,84
 Baby talk 3586
 Back dermatoses 3368
 in eruptive fevers 172
 lordosis 3063
 pain 22,4 2940
 in lower region, 3072
 swelling 2822
 Baldness 3439
 Barrel chest 3523
 Basal metabolic rate decrease 719
 increase 720
 Basophilia 1093
 Beard dermatoses of 3137
 eruptions of 3137
 Bed wetting 2,65
 Belching 17,0
 Bence-Jones proteinuria 3673
 Benedict solution, reduction of 3670
 Biliary cirrhosis 1975
 Biot respirations 2016
 Bisferiens pulse 3581
 Bites insect 3186
 Black and blue spots 3420
 eye 1612
 Blackheads 3268
 Bleeding 1112
 into bowel 1845
 from ear 2150
 from nose 2123
 prepuberal 2479
 from vagina, 2565
 in pregnancy 2664
- Blepharospasm 1574 1610
 Blind spots 1645
 Blindness 1638
 color 1835
 day 1535
 night, 1535
 Blisters 3331
 generalized 400
 Blood circulation in systemic disorders 951
 count basophils increased 1038
 lymphocytes increased 1038
 monocytes increased 1099
 disturbances
 azotemia, 2,78
 calcium decrease 721
 increase 725
 chloride decrease 732
 increase 737
 cholesterol decrease 759
 increase 758
 eosinophilia, 510
 globulin increase 795
 lipid increase 785
 oral signs 16,6
 phosphatase increase 709
 phosphate decrease 708
 increase 707
 potassium decrease 731
 increase 731
 protein increase 735
 sodium decrease 729
 increase 730
 sugar decrease 731
 increase 733
 uremia 22,6
 uric acid increase 737
 pressure anomalies 918
 high 910
 low 917
 spitting of 20,9
 in stool 1645
 vessels disturbances peripheral vascular dis-
 ease 996
 in vomitus 1764
 Body rash generalized 1,2
 weight gain 695
 loss 700
 Boils 3334
 Bone decalcification 2906
 endocrine disturbances 2338
 epiphyseal disturbances 2930
 febrile disturbances 19,1
 inflammation 192
 marrow abnormal cell count in, 1045
 metabolic disturbances 2878
 ossification disturbances 2,73
 pain in 2841
 radiotranslucency increased 2808
 swellings 2344
 Botryomy 18,8
 Bradycardia 877
 Bradypnea 2014
 Brain aneurysm 1437
 disturbances 1423 1437
 fontanelles disturbances 2729
 hemorrhage 1437
 infections involving 1463
 inflammation nonsuppurative 442
 meninges infections involving 1462

- Dermatoses, rhagades 3218
 scabs, 3196
 scaling, 3382
 of scalp 3234
 scars, 3218
 scratches 3186
 senile, 3214
 with skin atrophy 3402
 of stomach, 3368
 telangiectases 3394
 of toes 3296
 of trunk, 3368
 tumors, 3210
 ulcers 3218
 urticarial 3346
 vesicular generalized, 422
 localized, 3334
 welts, 3316
 wheals, 3346
 Dermoids of neck, 3314
 Desiccation, 704
 Diabetes mellitus oral signs 1674
 Diarrhea, 1840
 in food poisoning 240
 in infancy 2782
 Diastolic pressure diminished 918
 increased 918
 murmurs, 973
 Diroticism 3581
 Dilatation of stomach 1770
 Diminution in hearing acuity 2019
 Diphtheria oral signs, 1670
 Diplopia 1523
 Discharge aural, 2150
 breast, 2578
 nasal, 2100
 nipple 2378
 nose 2100 3590
 umbilical, 3557
 urethral, 2340
 vaginal, 2585
 Disk, choked, 1879
 Dislocation of lower extremity 9377
 of upper extremity 2971
 Distention, abdominal 1878
 Dizziness, 2020
 Dolichocephalus 2774
 Double vision, 1523
 Double-jointedness 2908
 Drip postnasal, 3601
 Drowsiness, 1224 1308
 Drug eruptions of face 3267
 purpura in 3422
 Dryness of skin, 3385 3402
 of febrile eruptions, 173
 of scalp 3255
 Dulness chest, with bronchial breathing 3538
 Dupuytren's syndrome, 2810
 Dwarfism, 693
 bones in, 2798
 pituitary 1155
 Dyschondroplasia, 2798
 Dysentery 1840
 in infancy 2782
 Dysmenorrhea, 2661
 Dyspareunia 2401
 Dyspepsia, 1770
 Dysphagia, 1722
 Dysphonia, 2160 3606
 Dyspituitarism 693
 Dyspnea, 2016
 Dystrophy adiposo-genital 1155
 mucular 2587
 Dysuria 2323
 Ear, bleeding from 2150
 buzzing in, 2141
 deafness, 2019
 dermatoses, 2113
 painful, 3250
 diminution in hearing acuity 2019
 discharge from, 2150
 disturbances of 3603
 pain in, 2132 2143
 ringing in, 2141
 tinnitus, 2141
 Earache, 2143
 Earlobes tophi, 3379
 Ecchymosis of eye 1612
 Echolalia, 3596
 Eczema, 175 3173
 of adolescence and childhood, 3360
 of ear 3609
 infantile, 3196
 of face 3173 366
 of infants and newborn, 3146
 Edema, angioneurotic, oral signs 1670
 of eyelid, 3507
 of face 3507
 generalized, 717
 of skin 3402
 Effusion, pleural 2032
 Egophony 3542
 Elbow burnitis 2311
 dermatoses 3333
 dislocation, 2971
 Electrocardiograms normal and abnormal 806
 Emaciation, 90
 Emetus 1770
 of blood 1764
 in food poisoning 240
 in infancy 2734
 Emphysema of mediastinum 2084
 Empyema thoracis 2032
 Erythema, buccal 1663
 oral 1668
 Encephalitis non-suppurative 44
 Encephalomyelomeningitis non-suppurative 44
 Endocarditis, 1018
 Endocrinopathy of bone disturbances, 2836
 oral signs 1673
 sexual development and 2430
 Enlargement See also Swellings
 of breast, 258
 of heart, 863
 of kidney 2230
 of liver 1973
 of muscle 258
 of neck, 314
 of spleen 1129
 of thyroid, 3514
 Entropion 1569
 Enteritis, 2263
 Eosinophilia, 542
 Epigastric pain 1788
 swellings, 1814

- Colostrum 2378
 Coma 1294
 Complexion pale 3506
 Conjunctivae disturbances 1627
 injection 1524
 Conjunctivitis 1618
 Consciousness loss of 1294
 Constipation 1852
 Contact dermatitis oral signs 1669
 Convulsions 1515
 in food poisoning 240
 in infancy 2780
 Cord spinal disturbances 1432
 infections involving 1461
 Cornea birth injury 1571
 softening 1591
 Corns 3296
 Corrigan pulse 3580
 Costovertebral tenderness 2274
 Cough 2050
 Cracks of skin 3°18
 Cramps abdominal 1878
 Craniotabes 2774
 Cranium disturbances in infancy 2774
 in fontanelle disturbances 2729
 Creatinuria 3077
 Cretinism 1333
 bones in 2720 2798
 Crick in neck 3520
 Croup in infancy 273°
 Crusting dermatoses 318° 3°18 3392
 in infants and newborn 3146
 Cryptogenic fever 26
 in infancy and childhood 2760
 Curvature spinal
 kyphosis, 3062
 lordosis 3063
 scoliosis 3060
 Cushing's syndrome 693 730 1153 1163
 Cyanosis 962
 of neck, 3510
 Cyclic vomiting in infancy 2734
 Cysts 3210
 of eye 1866
 nasal 3530
 oropharyngeal 1714
 sebaceous of face 3°60
 Day blindness 1535
 Deafness 2019
 Death rattle 2166
 Decalcification of bone 2806
 Decubitus 3494
 Deformities of hips thighs calves and legs
 2826
 of shoulder 2354
 of upper extremities 2954
 Deglutition painful 172°
 Dehydration "04
 Dental pain 2132
 Dentigerous cyst oral signs 1714
 Dento radicular cyst oral signs 1714
 Depigmentation of skin 3404 See also Pig-
 mentation
 in infants and newborn 3146
 Diencephalic disease 693
 Dermatitis See also Dermatoses Rash Skin
 atopic 175
 contact 3296 3378
 of adolescence and childhood 3360
 oral signs 1669
 in eruptive fevers, 172
 erythematous rash 180
 herpeticiform 4°2
 oral signs 1667
 medicamentosa 174 41° 42°
 oral signs 1670
 rash in 173 180
 perfume 3153 3163
 scarlatiniform rash 180
 seborrheal 3137
 of axilla 3233
 of face 3269
 Dermatoses See also Dermatitis Rash, Skin
 of abdomen 3368
 in adolescence 3360
 of aged 3214
 alopecia 3139
 of arms 3378
 of axilla 3233
 of back, 3364
 of beard 3437
 black and blue 3422
 blisters 3394
 bruises 342°
 bullous 3334
 of buttocks 3368
 on nail 3382
 of chest, 3368
 in childhood 3360
 cicatrices 3°18
 clefts 3218
 cracks 3218
 crusting 3334 3382
 cysts 3210
 depigmentation, 3404
 of ear 2113
 erythematous 3163
 excoriations 3186
 of extremities 3378
 eye in 1564
 of face 3266
 of feet 3296
 of fingers 3296
 fissures 3218
 of genitals 290
 with hair loss 3439
 of hands 3296
 of infants 3146
 with itching 3170 3178 3415
 keratotic, 3166
 of legs 3378
 of lip 1643
 macular localized 3390
 maculopapular localized 3390
 of neck 3244
 of newborn 3146
 nodules 3210
 of nose 2110
 oral signs 1667
 painful 3250
 papular localized 3340
 of perineum 290
 petechial 3393
 pigmented 3154
 purpuric 3422
 psoriatic 3334

- Festination, 3496
 Fever in aged, 950
 aseptic 96
 chills with, 92
 circulatory signs in, 1006
 cryptogenic, 26
 in infancy and childhood, 2760
 of doubtful origin, 26
 eruptive with generalized rash, 172
 signs other than rash in, 174
 in food poisoning 240
 intra-thoracic disorders with, 404
 metabolic 718
 in pregnancy 2642
 relapsing 24
 with skeletal disorders 19
 of unknown origin, 26
 Fibrillations of muscle 23, 2
 Fields of vision, disturbances 164
 Fingers, atrophy 3402
 clubbed, 2044
 dislocations 3296
 dislocation, 2971
 hypercontractile, 2064
 pain in, 2008
 Fish-skin, 3146
 Fissures of skin, 3219 3407
 Fistulas of abdominal wall, 3357
 Fits, 1519
 in infancy 2780
 Flatness, percussion of chest 3, 33
 Flatulence 1878
 Flus in abdomen, 1921
 Flush, facial, 3, 07
 Fontanelles disturbances 2729
 Food poisoning 240
 spitting 1724
 Forehead, dermatoses 3383
 rash in eruptive fevers, 173
 Form sense disturbances 1535
 Forward failure 990
 Fractures, pathologic, 2346
 in skeletal tumors 2636
 Fremitus of chest wall, abnormalities 3334
 increased, 3, 34
 Frequency of urination, 2310
 Friction rub 3334 3342
 Frigidity 2421
 Frohlich's syndrome 695 719 1155 2480
 Fructosuria 3677 4404
 Funnel chest, 3323
 Furuncles of face 3467
 Genitalia, dermatoses 290
 disturbances vaginal discharge 2535
 German measles rash in, 1 3 180
 Gibbus, 3067
 Giddiness, 2070
 Gigantism 69, 1155 994
 Gland, lymph. See *Lymphadenopathy*
 mammary pain in 2, 8
 Glaucoma, 1618
 Gleet, 2340
 Glenard's syndrome 719
 Globulin, increased blood content, 735
 Glycosuria, 3676 4405 4407
 Gout 3514
 Gonadal dysfunction, oral signs, 1674
 Greasiness of skin, 3437
 Groom swellings 309
 tumors, 3097
 Growth decreased, in child, 693
 increased, 692
 Gums disturbances 1701
 Gynecomastia, 2578
 in malignancies of testes 114
 Hair, absence 3439
 in albinism 3404
 distribution abnormalities 3556
 follicles dermatoses, 3333
 inflammation, 333, 3437
 loss of 3439
 Halitosis, 1660
 Hand-Christians-Schüller syndrome 1533
 Hands, depigmentation in 3404
 dermatoses 296
 maculopapular eruptions, 3320
 pain in, 2903
 rash, 3347
 in eruptive fevers, 173
 Harrison groove, 3 23
 haziness of vision, 1592
 Head, dermatoses 32, 4
 disturbances in adult, 3, 04
 pain in, 1512
 rash, in eruptive fevers, 173
 shape disturbances in infancy 2774
 in vascularities 97 9
 swellings in infancy 2774
 tumors in infancy 2774
 veins, prominence in, 2775
 Headache 1512
 Hearing acuity diminution in, 2012
 increased, 2026
 Heart, aortic lesions, 924
 bradycardia, 877
 disorders associated with fever 1006
 congenital 1, 964
 electrocardiograms, 806
 endocarditis, 1018
 hypertrophy 868
 lesions, 924
 murmurs 973
 precordial pain, 897
 rate increased, 87, 2
 slowed, 877
 sounds, alterations in, 78
 systolic hypertension in, 910
 tachycardia, 875
 valve defect, 970
 inflammations 1018

- Epilepsy 927 1428
 Epiphora 1525
 Epiphyses disturbances 2930
 Epistaxis 2123
 Erections painful 2453
 Erection 1878
 Eruptions See also *Dermatitis*
 in adolescence 3360
 afebrile 173
 buccal 1668
 bullous 3331
 in childhood, 3360
 drug 3393
 of ear 2113
 erythematous 150
 of face 326
 generalized afebrile 17
 in eruptive fevers 172
 of genitals 290
 maculopustular generalized 412
 localized 3390
 of mouth 1668
 nodular localized, 3390
 of nose 2110
 oral 1668
 papulopustular 3331
 of perineum 290
 purpuric 3422
 pustular generalized 422
 localized 3334
 scarlatiniform 180
 of trunk 3368
 vesicular generalized 423
 localized 3334
 wheals 3346
 Eruptive fevers rash in 172
 signs other than rash in 174
 Erysipelas oral signs 1673
 Erythema See *Rashes*
 multiforme oral signs 1667
 nodosum 3250
 Erythroblastosis foetalis 1833
 Exanthem See *Rashes*
 Excoriations 3186
 Exhaustion 2890
 Exophthalmos 1575
 Expansion chest abnormalities 3528
 Expectoration bloody 2058
 foul 2215
 Expiration abnormalities 3542
 Extremities dermatoses 3296 3378
 Exudates 3738
 Eye(s) in albinism 3401
 black 1612
 bulging 1575
 color disturbances 1535
 congenital anomalies 1560
 conjunctivae disturbances 1627
 conjunctival vs. ciliary injection 1501
 conjunctivitis 1618
 cornea birth injury 1571
 softening 1591
 cysts 1566
 dark circles under 1612
 in dermatoses 1564
 disturbances of lashes and lids, 1612
 exophthalmos 1575
 fields of vision disturbances 1645
 form sense disturbances 1335
 Eye(s) glaucoma 1618
 inability to close 1612
 injuries 1571
 iritis 1818
 light disturbances 1535
 mechanical disturbances 1569
 muscles deficient action 1646
 orbit disturbances 1615
 pain in 1582
 papilledema, 1579
 photophobia 1574
 ptosis 1649
 pupil abnormalities of diameter 1633
 other than diameter 1534
 reduction in visual acuity 1638
 signs in metabolic disorders 1591
 in poisoning 1591
 spots before 1592
 tumors 1566
 Eyeball injury 1571
 Eyebrows disturbances, 1612
 Eyelashes disturbances 1612
 Eyelid blepharospasm 1574 1612
 disturbances 1612
 drop 1649
 ecchymosis 1571
 edema 3507
 reflex 1534
 FACE See also *Facies*
 abnormalities 3406
 apple jelly nodules of 3390 3402
 depigmentation in 3404
 dermatoses 3165 3266
 of beard 3437
 edema 3507
 eruptions 3155 3266
 flushed 3507
 hemiatrophie 3402
 muscles deficient action 1616
 pain in, 2132
 papules 3166
 rash in eruptive fevers 173
 Facies 3509 See also *Face*
 Fainting 930 1891 See also *Coma*
 Falling 3496
 Fatigue 2890
 Fats increased in blood 738
 Febrile disorders of the aged 930
 intrathoracic disorders 464
 skeletal disorders 192
 Feces blood in 1843
 incontinence 1915
 tarry 1843
 Feeble-mindedness 1333
 Feet dermatoses 3296
 scaling 3342
 maculopustular eruptions 3390
 pain in 2508
 purplé nodules on 3390
 rash 3347
 in eruptive fevers 173
 swelling of 3206 3392
 Female endocrine disturbances in 2480
 infertility in 2492
 masculinization 2481
 sexuality disturbances 2491
 Feminization of male 2481 3536

- Inguinal adenitis 3092
 lymphadenopathy 3092
 swellings 3092
 tumors 3092
 Insomnia 1303
 Intercoastal spaces bulging 35 3
 retraction, 3523
 Intercourse painful 2191
 Intestinal obstruction 19 8
 Intrathoracic disorders, febrile 401
 Involutional psychoses 1306
 Indocyclitis, traumatic 1571
 Intus 1618
 Irregular walk in childhood 237
 Itching anal 1918 3415
 generalized, 3170
 localized, 3179
 of scalp 3254
 of vagina, 2594
 of vulva, 2094
 Ivory facies 3309
- JANDREK, laboratory aids in, 1952
 in newborn 2761
 obstructive 1934
 Jaw disturbances 1703
 Joint(s) ankylosis 2810
 arthropathies of endocrine origin 2836
 of metabolic origin 2878
 disease degenerative 2802
 inflammation, 192
 locking 2810
 metatarsalgia 2803
 mobility diminished 2810
 increased, 2808
 painful 2803 2803
 polyarthralgia 2802
 Jugular vein disturbance 3516
- KAPOSI'S disease purpura in 342
 stomatocia, 1531
 keratosis 3166 3297
 keruiterus 2761
 Kidney disturbances 2364
 enlargement of 2230
 Kippel Feil syndrome 2810 2818 3511
 knee dislocation 297
 jerk 3584
 joint disturbances 2810
 hypnosis 3069
- LACRIMATION 1523
 deficient, 1509
 Lactation disturbances 2578
 Lactosuria, 3077
 Lagophthalmos 1 11 1612
 Laryngismus stridulus 2730
 Larynx abnormalities of 3606
 Lauence Moon Biedl syndrome 1155 1333
 2490
 ne 700
 black and blue spots on 3380
 testicles 2876
 3378
- Legs rash in eruptive fevers 172
 swellings painless 28 6
 tenderness 2869
 Leontias osseum 2793
 Leukemia oral signs 1677
 Leukocytosis 1037
 Leukoplakia 3211 3219
 Leukorrhea 2083
 Leucosuria 3677
 Lido abnormalities 2491
 Lipian planus oral signs 1667
 Lid drop 1649
 Light flashes 1535
 reflex paralysis of 1334
 sense disturbances 1655
 sensitivity 1574
 Lump 2832, 3496
 in childhood 736
 Iritis increased content in blood 738
 Lip depigmentation in 3404
 disturbances 1683
 Lasp 3 96
 Liver dulness 3539
 enlargement of 1973
 portal vs biliary curvatures 1073
 Locbia rubra 2664
 Locking of joint 2910
 Low pain in 74
 rash generalized 17
 Lordosis 3063
 Low back pain 3072
 Lumbar 2274 3072
 Lumbar pain 2274 3072
 upper 2940
 swellings 2822
 Lumps of skin 3410
 Lung abscess 2215
 postoperative complications 4016
 Lupus erythematosus oral signs 1667
 vulgaris oral signs 1673
 Lymph nodes axilla, enlargement 3536
 cervical enlargement 3518
 general enlargement 1136
 Lymphadenopathy of axilla, 3526
 cervical 3518
 generalized 1136
 inguinal 3092
 mediastinal, 1084
 Lymphocytosis 1093
- MACROCEPHALIA 274
 Macroglossia 1687
 Macropsia 1535
 Maculae general red 412
 in eruptive fevers 172
 localized 3090
 oral 1668
 Maculopapules generalized 412
 in eruptive fevers 172
 localized 3390
 Malar flush 3 06
 Male breast disturbances 2578
 endocrine disturbances 2480
 femoral 2491
 genitalia, malignancies of testes, 2444
 impotence 2409
 infertility 2419
 atrophy 2419

- Heartburn 1770
 Height decrease in adult 694
 in child 693
 increased 692
 Hematemesis 1764
 Hematuria 2306
 Hemeralopia 1535
 Hemianopia 1645
 Hemiplegia 1497 3197
 Hemoglobinemias 1074
 Hemoglobinuria 2306
 Hemolytic anemias 1061
 Hemophilia 3422
 oral signs 1677
 Hemoptysis 2058
 Hemorrhage into skin 3370
 anal 2123
 prepubertal 2170
 vaginal 2065
 in pregnancy 2661
 vitreous 1571
 Hemorrhagic di. bases 1112
 Hemothorax 2030
 Hepatomegaly 1973
 Hermaphroditism 2181
 Herpes of face 3207
 oral signs 1678
 zoster 8700
 Hiccough 1933
 Hidebound facies 3500
 Hippocratic facies 3500
 fingers 2064 2878
 Hippus 1334
 Hip deformities painless 2820
 dislocation 2977
 pain in 2868
 swellings painless 2826
 tenderness in 2865
 Hoarseness 2160 3606
 Homosexuality in female 2191
 Hormonal imbalance in bone disturbances 2856
 oral signs 1673
 sexual development and 2180
 Hunger pain 1788
 Huntington's chorea 1333
 Hydrocephalus 1933 274
 Hydro pneumothorax 2035
 Hydrothorax 203
 Hyperacusis 2096
 Hyperalgesia of face 2132
 Hypercalcemia 723
 Hyperchloremia 732
 Hypercholesterolemia 736
 Hyperglobulinemia 732
 Hyperglycemia 733 410
 Hyperhydration 202
 Hyperhydremia 202
 Hyperlipemia 738
 Hypermotility of joints 2808
 Hypernatremia 730
 Hyperparathyroidism
 Hyperphosphatemia
 Hyperphospheremia
 Hyperpiesis 910
 Hyperpnea 2016
 Hyperpotassemia
 Hypertension systolic 910
 Hyperthyroidism oral signs 163
 Hypertrophy See also Swellings
 of breast 2378
 of heart 868
 of kidney 2330
 of liver 1973
 of muscle 2332
 of neck 3514
 pulmonary osteoarthropathy 2064
 of spleen 1100
 of thyroid 3514
 Hyperuricemia 737
 Hypocalcemia 724
 Hypochloremia 732
 Hypochlosterolemia 738
 Hypogastric pain in 2302
 swellings 2621
 tumors 2621
 Hypoglycemia 734
 Hypogonadism 695
 Hypomenorrhea 2618
 Hyponatremia 729
 Hypophosphatemia 728
 Hypopotassemia 731
 Hypopyrexia acute 22
 sustained 21
 Hyposthenuria 2231
 Hypotension 917
 relative between arms and legs 918
 Hypothermia acute 22
 sustained 21
 Hypothyroidism 695
 Hysteria 14 8
 crepus laboratory aids in 1957
 in newborn 2761
 nuclear 2761
 obstructive 1904
 of eye 1333
 Idiocy 3396
 Idiopathic abdominal 1978
 Ileus 2000
 Imbalance endocrine in bone disturbances
 oral signs 1673
 sexual development and 2180
 Imbecility 1333
 Impotence male 2409
 Incontinent anal cyst oral signs 1714
 Incontinent of feces 1915
 Incontinence
 of urine 1770
 Indigestion 593
 Infantile respiratory 2196
 Infections 30
 of skin 1500
 Infertility 219
 male 219
 on bone 192
 Inflammation suppurative 442
 25 8
 oral 85 3
 ules 3437
 es 1019
 nonsuppurative 442
 Fermat
 nonsup

- I g u a l adenitis 300^o
 lymphadenopathy 309^o
 swellings 309^o
 tumors 309^o
 Insomnia 1305
 Intercostal spaces bulging 352^o
 retraction 352^o
 Intercourse painful 2191
 Intestinal obstruction 15 9
 Intrathoracic disorders febrile 404
 Involutional psychoses 1866
 Indocyclitis traumatic 1371
 Iritis 1618
 Irregular walk in childhood 2437
 Itching anal 1916 3415
 generalized 3170
 localized 3178
 of scalp 3254
 of vagina, 2594
 of vulva, 2594
 Ivory facies 3509
- JAUNDICE** laboratory aids in 1952
 in newborn 2761
 obstructive 1954
 Jaw disturbance 170^o
 Joint() ankylosis 2810
 arthropathic of endocrine origin 2856
 of metabolic origin 2878
 disease degenerative 286^o
 inflammation 192
 locking 2810
 monarthralgia 2803
 motility diminished 2810
 increased, 2808
 painful 2804 2803
 polyarthralgia 2802
 Jugular vein disturbance 3516
- KARPOSIS** disease purpura in 342^o
 Keratomalacia 1591
 Keat = 3166 3 97
 Krukenberg 2761
 Karyod disturbances 2364
 element of 2230
 Klippel Feil syndrome 2810 2818 3511
 Knee dislocation 2077
 jerk 3534
 joint disturbances 2810
 Kyphosis 3062
- LACRIMATION** 152^o
 deficient 1569
 Lactation disturbances 2578
 Lacturia, 3677
 Lagophthalmos 1569 161
 Laryngismus stridulus 273
 Larynx abnormalities of 3606
 Laurence Mo = Biedl syndrome 1155 1333
 2480
 Leanness 700
 Legs black and blue spots on 3380
 deformities painless 2826
 dermatosis 3378
 painful 3 50
 nodules on 34 2
 pain, 2868
- Legs rash in eruptive fevers 17^o
 swellings painless 2826
 tenderness 2868
 Leontiasis osium 2793
 Leukemia oral signs 1677
 Leukocytosis 1097
 Leukoplakia 3211 3^o19
 Leukorrhea 2^o85
 Leucosuria 3677
 Liliabnormalities 2491
 Lichen planus oral signs 1667
 Lili drop 1619
 Light flashes 1635
 reflex paralysis of 1534
 sense disturbances 1533
 sensitivity 1574
 Limp 283^o 3196
 in childhood 736
 Lipid increased content in blood 738
 Lips depigmentation in 3404
 disturbances 1685
 Lip 359^o
 Liver disease 3539
 enlargement of 1913
 portal vs biliary cirrhosis 19^o5
 Lochia rubra 2604
 Locking of joints 2810
 Loin pain in 74
 rash generaliz d 17^o
 Lordosis 3063
 Low back pain in 3072
 Lumbos = 2774 3072
 Lumbar pain 2274 307^o
 upper 2940
 swellings 2822
 Lumps of skin 3^o10
 Lung abscess 2215
 postoperative complications 4016
 Lupus erythematosus oral signs 1667
 vulgaris oral signs 1613
 Lymph nodes axilla enlargement 35 6
 cervical enlargement 3318
 general enlargement 1136
 Lymphadenopathy of axilla 35^o6
 cervical 3318
 generalized 1136
 inguinal 3002
 mediastinal 2084
 Lymphocytosis 1098
- MACROCEPHALUS** 2774
 Macroglossia 1687
 Macropsia 1535
 Macule general ed 412
 in eruptive fevers 172
 labeled 3390
 oral 1668
 Maculopapules generalized 41^o
 in eruptive fevers 1^o
 labeled 3390
 Male flush 3506
 Male breast disturbances 2578
 endocrine disturbance 2480
 feminization 2481
 genital a, malfunctions of testes, 2444
 mutilation 2409
 infertility 2419
 sterility 2419

- Mammary gland pain 2578
 Mandibular neuralgia 2132
 Manic-depressive insanity 1368
 Marasmus 2784
 Marrow abnormal cell count in 1013
 Masculinization of female 2491 3,4,6
 Mask faces 3509
 Mastalgia 2578
 Mastodynia 2578
 Mastoiditis 3603
 Maxillary neuralgia 2132
 Measles 412
 oral signs 1670
 throat in 3601
 Mediastinum disturbances 2084
 Melema 1843
 Melorheostosis 2703
 Meningitis 1499 1462
 nonsuppurative 467
 Meningococcemia rash in 172
 Menopause premature in female 2490
 rejuvenation after 2490
 Menorrhagia 2,57
 Menstruation disturbances
 amenorrhea 2618
 delayed 2618
 dysmenorrhea 2,61
 hypomenorrhea 2618
 infrequent 2618
 menorrhagia 2557
 oligomenorrhea 2618
 painful 2561
 profuse 2557
 prolonged 2557
 scant 2618
 Merysism 1770
 Metabolic disorders eye signs 1691
 fevers 718
 osteoarthropathies 2578
 Metallochrom basal decrease in 719
 increase in 720
 Metal poisoning 762
 Metamorphopsia 1835
 Metastasis 1878
 Metrorhagia 2565
 Microcephalus 1333 2792 2774
 Micropia 1635
 Micturition decreased 2232
 frequent 2310
 increased 2231
 painful 2325
 suppressed 2232
 Migraine 1429
 Mikulicz disease 3517
 Milk secretion disturbances 2578
 sugar in urine 3576
 Mincing gait 3490
 Miosis 1633
 Moles 3155
 Monarthralgia 2803
 Mongolian idiocy 1156 1333 2729
 Monocytosis 1099
 Motility of joints decreased 2310
 increased 2803
 Mouth breathing 3509
 eruptions 1668
 signs of allergy 1669
 of blood dyscrasias 1676
 of dermatoses 1867
 Mouth signs of endocrinopathy 16 3
 of infection 1670
 of poisoning 1677
 of vitamin deficiencies 1675
 Movement of joints decreased 2310
 increased 2803
 Mucocoele oral signs 1,14
 Mumps 3517
 oral signs 1670
 Murmurs heart 973
 Muscivora volitantes 1615
 Muscle disturbances 2882
 dystrophies 2887
 eye deficient action 1646
 facial deficient action 1647
 inflammation in skeletal disorders 107
 tenderness of chest 3334
 Mutism 3567
 Mydriasis 1633
 Myelitis nonsuppurative 442
 Myringitis 3003
 Nails dermatoses 3383
 Nasal See also Nose
 discharge 2100
 hemorrhage 2123
 septum abnormalities 3590
 twang 3596
 Nausea 1770
 in food poisoning 240
 Navel region pain in 1887
 Nerve reflex paralysis 1634
 Neck abnormalities 3511
 acne 3368
 bone disturbances 2818
 crick in 3590
 dermatoses 3234
 lymph nodes enlargement 3514
 opisthotonos 3590
 pain in 3,20
 rash in eruptive fevers 172
 stiffness 3,20
 swellings 3,11
 tumors 3,14
 vascular disturbances 3516
 wry 3590
 Neoplasia m(s) See Tumor
 Nephropathies 2364
 Nerve(s) peripheral infections involving 1467
 injuries 1476 1480
 plexuses disturbances 1493
 tract injuries 1476
 Nervous system disturbances of spinal cord 1432
 Neuralgia facial 2132
 Neuritis peripheral 3403
 Neurosis 1313
 gastric 1787
 Neutrocytosis 1097
 Neutrophilia 1097
 Nervi 3155
 Nicotin deficiency oral signs 1676
 Niemann Pick syndrome 1933
 Night blindness 1535
 Nipples disturbances 2578
 Paget's disease 3592
 scaling dermatoses 3332
 Nocturia, 2231

- Nodules 31 6 3 10 3407
 Nose bleeding from 2123
 dermatologic 2110
 discharge from 2100
 internal abnormalities 30
 pain in 2067 215
 regurgitation of food through 17
 Numbness See *Isopropyl alcohol*
 Nutritional deficiencies oral signs 167
 Nyctalopia 153a
 Nycturia 31
 Nymphomania 2491
 Nystagmus pupillary 1534
- Obesity** 695 See also *Weight gain*
 Obstruction of abdomen 1878
 of nose 3590
 urinary 2468
 Ocular See *Eye*
 adnexa, disturbances 1612
 Oculomotor paralysis of cyclic variety 1534
 Odontalgia 1680 2132
 Odors of breath 1660
 disturbances 2120
 Olfactory disturbances 2120
 Oligomenorrhea, 2618
 Oligopnea, 2014
 Oliguria, 2232
 Ophthalmic neuralgia 2132
 Ophthalmos 3520
 Optic nerve injuries 1571
 Oral signs of allergy 1660
 of blood dyscrasias 1676
 of dermatoses 1667
 in endocrinopathy 1673
 in infection, 1670
 of nutritional deficiencies 1675
 of poisonings 1677
 surfaces enanthems 1668
 Orbit disturbances 1615
 Oropharyngeal cysts 1714
 Orthopnea 2016
 Orthostatic hypotension, 217
 Ossification disturbances 2798
 Ostealgia 2341
 Osteitis deformans 2798
 Osteoarthropathies of endocrine origin 2856
 hypertrophic pulmonary 2064
 of metabolic origin, 2878
 Osteoarthritis 2362
 Osteomalacia 2798
 Osteopetrosis 2798
 Otalgia 2132 2143
 Otitis media 3609
 Otorrhea 2150
 Orycephalus 2729 2774
- Pain** in abdomen during pregnancy 266
 in food poisoning 240
 generalized 1748
 in infancy and childhood 2, 0
 left lower quadrant 1866
 left upper quadrant 1942
 right lower quadrant 1880
 right upper quadrant, 1959
 anoperineal 1913
- Pain in arms 2898
 in back 2 74
 in bone 2341
 in breast 2078
 in calf 2665
 in face 99
 in chest 83 2080 2940
 in dermatoses 0
 in ear 13 2143
 in epigastrium 1788
 in erection 2453
 in eye 1582
 in face 2132
 in feet 2007 2 96
 in fingers 2009
 in hands 3 16
 in hand 151
 in hips 868
 in hypogastrium 2 02
 during intercourse in female 2491
 in joints 2802 2803
 in left lower quadrant 1866
 in left upper quadrant 1942
 in leg 2368
 in loin, 2074
 in lower back 3072
 lumbar 2074
 during menstruation 2501
 in neck 35 0
 in nose 2067 2132
 in penis 2430
 in perineum 1913
 precordial 892
 after pregnancy 206
 in right lower quadrant 1830
 in right upper quadrant 19 9
 in scrotum, 2430
 in shoulders 2368
 in stomach 1770 1788
 on swallowing 1722
 in teeth 1680 132
 in testes 2430
 in thigh 2868
 in thorax 2940
 in throat 2071
 in toes 2908
 in umbilical region 1887
 in upper back 2940
 in upper lumbar region 2940
 Painful coitus 2491
 Palate disturbances 1716
 Pallid 3536
 Pallor of face 3506
 Palms maculopapular eruptions 3391
 Palpebral fissure disturbances 1612
 Papilledema 1579
 Papular eruptions generalized 412
 in eruptive fevers 172
 in febrile eruptions 175
 localized 2390
 oral 1668
 Paradoxus pulse 3531
 Paralysis eye 1628 1533
 of light and near reflexes 1534
 facial 3507
 Parosmia 1566
 Parosmia, 2120
 Parotid gland disturbances 3517
 Patellar dislocation 2977

- Patellar reflex 3584
 Peanut whistle sound 2166
 Pectoriloquy 351^a
 Pemphigus 175 472
 oral signs 1667
 Penis dermatoses 290
 disturbances 2453
 pain in 2430
 Pentosuria 3677
 Percussion abnormalities of chest wall 338
 Perineum dermatoses 290
 pain in 1013
 Peripheral nerves infections involving 1461
 injuries 1490
 reaction patterns 1476
 vascular disease 996
 Peristalsis visible 3557
 Pertussis in infancy 2732
 Petechiae 3398
 Pharynx cysts 1714
 Phosphatase increased 723
 Phosphate decrease in blood and serum 728
 increase in blood and serum 727
 Photophobia 1574
 Photopia 1636
 Pica 1776
 Pigeon chest 3023
 Pigmentation of abdominal wall 3366
 atrophy and 3403
 of breast, 2578
 dermatoses 3154 3334
 of face 3288
 of feet 3296
 of hands 3296
 in infants and newborn 3146
 facial 3507
 generalized 3242
 of nipple 2578
 oral 1009
 of sclera 1691
 Pituitary anterior disturbances 1155
 Cushing's syndrome 1163
 Pityriasis rosea 175
 Plantar reflex 3584
 Plaques in aged 3214
 facial 340
 greasy 3137
 Plateau pulse 3580
 Pleura pneumothorax 2035
 Pleural effusion 2032
 Plexuses disturbances 1498
 Plumpness 695
 Pneumonia, lobar 2182
 Pneumonitis 2182
 Pneumothorax, 2035
 Poisoning chemical 752
 eye signs 1591
 food 240
 gas 746
 metal 762
 nongaseous 752
 oral signs 1677
 vapor 746
 Poliomyelitis throat in 3601
 Polyarthralgia, 2802
 Polycythemia vera, oral signs 1677
 Polygalactia 258
 Polyphagia 1776
 Polypnea 2016
 Polyrhea 1810
 Polyuria 2231
 Portal cirrhosis 1975
 Postnasal drip 3601
 Postoperative pulmonary complications, 4016
 Potassium decreased, of blood and serum 31
 increased in blood and serum 731
 Precocity sexual 2180
 Precordial bulging 3528
 dulness 3539
 pain 892
 Pregnancy anemias 1089
 signs 2630
 tests in malignancies of testes 2446
 Prematurity 2192
 Prispism 2453
 Progeria 3509
 Proptosis 1575
 Protein increased blood content, 735
 Proteosuria, 3673
 Intrusion of abdominal wall 3550
 Proud flesh, 3211
 Prunus ans 1916 3415
 generalized 3170
 localized 3178
 of scalp 3735
 vulvae 2594
 Psoriasis 175 410 3179
 Psycho sensory reflex loss 1534
 Psychosis 1313
 idiopathic 1363 1366
 symptomatic 1465 1374
 Ptomaine 240
 Ptosis 1669 1649
 Ltyalism 1709
 Pubertas praecox 2180
 Pulmonary complications postoperative 4016
 Pulsations abnormal of thoracic cage 3598
 episternal 3510
 supraclavicular 3516
 Pulse abnormalities 3580
 pressure disturbances 918
 rate increased 875
 slowed 877
 Lumpkin head 2774
 Pupillary diameter abnormalities
 miosis 1533
 mydriasis 1533
 other 1534
 Purpura increased in blood 73
 Purpura 3422
 in infants and newborn 3146
 oral 1668
 thrombocytopenic oral signs 1677
 Pus in urine 2352
 Pustules generalized 422
 in eruptive fevers 172
 localized 3334
 Lypneumothorax 2035
 Lymphorax 2035
 Pyrexia in aged 990
 aseptic 26
 with chills 32
 circulatory signs in, 1006
 cryptogenic 26
 in infancy and childhood 2760
 of doubtful origin, 26
 eruptive with generalized rashes 172
 signs other than rash in, 174

Pyre a in food poison ing 210
 intrathoracic disorders with 401
 metabolic 718
 in pregnancy 2612
 relap ing 23
 with skeletal disorders 192
 of unknown origin 26
 Pyuria 21,2

RADIODEMATITIS skin atrophy in 3102
 R diatranslucency of bone increased 2806
 Rales 3,42

Ranula oral signs 1714
 Rashes 316. See also *Dermatoses*
 in afebrile eruptions 175
 on arms 3378
 on ear 2113
 in eruptive fevers 172 180
 erythematous generalized, 180
 of face 3 66
 of feet 3296
 generalized in af brile conditions 175
 in eruptive fevers 172
 of genitals 90
 of hands 96
 of infants 3146
 of legs 3378
 localized 3162
 maculopapular generalized 412
 localized, 3390
 of mouth 1008
 of newborn 3146
 of nose 110
 of perineum 200
 pustular generalized 4
 scarlatiniform 180
 vesicular generalized 400

Rectum itching 3415

Red eye See *It shes*

Reeling gait 3583

Reflexes abnormal alno maltes 3 56
 eyelid abnormal 1531
 nervous system 3584
 pupillary abnormal 1 34

Regurgitation from stomach 1770
 through nose 1722

Rejuvenation after menopause 2480

Renal calc 2274
 enlargement 2230
 glycosuria 3676
 insufficiency 2 6

Respiration increased 3538

Respiration depression 2014

Respiratory irregularities 2016
 noisy 2166
 in infancy 2732

Tract disturbances
 chemical 2065
 cough 20 0
 hemoptysis 20 8
 infections 2106
 mechanical 2046
 sneezing 2064

Restless sleep 3101

Retention of urine 264

Retina contus on 1571
 macular degeneration 1592

Retraction of abdominal wall 3566

Retrosternal dullness increased 3533

Rhagad 3 12

Rheumatism 19

Rheumatoid arthritis 266

Rhin alga 215

Rhinitis 3590

Riboflavin deficiency oral signs 1675

Rickets 2722 2799

oral signs 1676

rosary 3523

Right upper quadrant pain in 1930

Rigidity involuntary of abdominal wall 1446
 of muscle 2332

Rigors 3

Ringing in ear 2141

Rub friction, 3543

Rubella, 180

throat in, 3601

Tumors facial 3507

Rumination 1 70

SALIVARY gland disturbances 2617

Salivation excessive 1 09

Scabies 3517

Scab 3186 3218

Scaling in afebrile eruptions 176

dermatoses 3382

Scalp atrophy 3402

dermatoses 3204

in infants and newborn 3146

rash in eruptive fevers 172

Scrotum pain in 2430

swellings and tumors 2441

Sho lder bursitis 2311

dislocation 2971

Skin anal itching 1916 3415

dermatoses of abdomen 3369

in adolescence 3360

of aged 3214

alopecia 3439

of arms 3378

axilla, 3203

of back 3369

of beard 3437

black and blue 3102

blisters 3334

bruises 34 2

bullous 3334

of buttocks 3368

chemical 333

of heat 3368

in childhood 3360

cic trices 3218

clefts 3218

cracks 3218

crusting 3334 3382

cyst 3210

depigmentation 3401

of ear 2113

erythematous generalized 180

localized 3162

ex oriations 3186

of extremities 3378

eye in 1561

of face 3 66

of feet 3 96

of fingers 3296

Skin dermatoses (further) 3218

- of genital 290
 - in the hair loss 3111
 - of hands 3296
 - of infants 3116
 - with itching 3170 3179 3115
 - keratotic 3166
 - of legs 3378
 - of lip 1685
 - macular localized 3390
 - maculopapular localized 3390
 - of neck 3254
 - of newborn 3146
 - nodular 3210
 - of nose 2110
 - oral signs 1667
 - painful 3250
 - papular localized 3390
 - of perineum 290
 - petechial 3393
 - pigmented 3151
 - purpuric 3422
 - pustular generalized 422
 - localized 3334
 - rhagades 3218
 - scabs 3196
 - scaling 3382
 - scalp 3254
 - scars 3218
 - scratches 3186
 - senile 3214
 - with skin atrophy 3402
 - of stomach 3369
 - telangiectases 3394
 - of toes 3296
 - of trunk 3368
 - tumors 3210
 - ulcers 3218
 - urticarial 3310
 - vesicular generalized 422
 - localized 3334
 - welts 3316
 - wheals 3346
- eruptions See also *Dermatitis*
- in adolescence 3369
 - afebrile 178
 - buccal 1668
 - bullous 3334
 - in childhood 3360
 - drug 3308
 - of ear 2113
 - erythematous 180
 - of face 3268
 - generalized afebrile 175
 - in eruptive fevers 172
 - of genitalia 290
 - maculopapular generalized 412
 - localized 3390
 - of mouth 1668
 - nodular localized 3390
 - of nose 2110
 - oral 1668
 - papulopustular 3334
 - of perineum 290
 - purpuric, 3422
 - pustular generalized 422
 - localized 3334
 - scarlatiniform 180
 - of trunk 3368

Skin eruptions vesicular generalized 422

- localized 3334
 - wheals 3346
 - erythemas 3162 See also *Rashes*
 - fissures 3218
 - hide-bound 3402
 - itching of anus 1916 3415
 - generalized 3170
 - localized 3178
 - of scalp 3255
 - of vulva 2694
 - inflammation See *Rashes*
 - keratoses 3166
 - leathery 3178
 - nodules 3210
 - perineal dermatoses 290
 - petechiae 3393
 - pigmentation generalized 3212
 - lack 3404
 - pruritus ani 1016 3415
 - generalized 3170
 - localized 3178
 - of scalp 3255
 - vulvae 2694
 - purpuric lesions 3422
 - pustules 422
 - rash See *Rashes*
 - rhagades 3218
 - scalp itching 3258
 - acral heat 3186
 - shrinking 3402
 - striae 3402
 - telangiectases 3394
 - tenderness 3401
 - of chest 3534
 - thickening 3163 3402
 - thinning 3402
 - tumors 3210
 - ulcers 3218
 - venules generalized 422
 - localized 3334
 - vulval itching 2591
 - wheals 3346
 - whiteness 3102
- Skull disturbances in adult 3501
- eruptions 3254
- Sleeplessness 1305
- Smallpox rash in 173
- Smell disturbances 2120
- Snoring 2064
- Snoring 3500
- Snuffles in neonatal syphilis 2733
- Sodium decreased in blood and serum 703
- increased in blood and serum 730
- Soles maculopapular eruptions 3391
- Somnolence 1294 1308
- Sore throat, 2071 3600
- Spasms of muscle 2382
- Spastic walk in childhood 2737
- Speech disorders 3536
- hoarseness 2160
- Spinal cord disturbances 1432
- infections involving 1461
 - injury reaction patterns 1476
- Fluid abnormalities 3735
- Spine cervical disturbances 2818
- curvature
 - kyphosis 3062
 - lordosis 3063

- Spine curvature scoliosis 3060
 pitting of food, 1722
 Splanchicoptosis 719
 Spleen enlargement 1129
 Sprue oral signs 1676
 Sputum bloody 2038
 foul odor 2215
 Squint 1531
 staggering 3 III
 hammering 3 96
 Stature decrease in adults 694
 in child 693
 increased 692
 Steppage gait 3126
 Sterility female 2492
 male 2419
 Stomatitis 2064
 Stertor 2166
 Stiffness of neck 3020
 Stillbirth 2492
 Stomatitis, dermatoses 8368
 lilation 1770
 dyspepsia, 1770
 neurosis, 1787
 p in in, 1788
 tumor 1787
 ulcer 1787
 Stools tarry 1843
 Stomatitis 695
 Strabismus 1531
 Strangury 1913 2320
 Strength loss 2890
 Striae 3404
 of abdominal wall 3356
 Stridor 2166
 in infancy 2730
 Stuttering 3396
 Sublingual gland disturbances 3317
 Submaxillary gland disturbances 3317
 Succussion 3340
 Sucrosuria, 3677
 Sugar blood, decreased 734
 increased content 733
 Swallowing pain in 1722
 Swellings abdominal 3356
 left lower quadrant 1870
 left upper quadrant, 1849
 right lower quadrant, 1836
 right upper quadrant 1907
 due to solid tumors 1700
 of back, 2800
 of bone 2344
 of bursae 2811
 of chest wall 8503
 epistaxis 1814
 feet, 3 96
 generalized 717
 hands 3 96
 of head in infancy 2774
 of hypogastrium 621
 in infants, 3146
 of inguinal region 3092
 joints 2810
 larynx 3608
 lumbar region, 28 2
 neck 3514
 newborn, 3146
 painless of hips thigh 2826
 feet 2904
 Swellings painless, of upper extremity 2904
 of parotid gland 3517
 of salivary gland 3517
 of scrotum 2411
 of skin 3210
 of stomach 1814
 of throat 3600
 of sublingual gland 3517
 of submaxillary gland 3517
 Symblepharon 1562
 Syncope 927 930
 Syphilis oral signs 1671 1672
 rash in 172 3331
 Systolic hypertension 910
 murmurs 973
 pressure decreased 917
 Tachycardia 875
 Tachypnea 2016
 Tachypnea 2016
 Tachypnea 2016
 Talking disorders 3386
 Tarry stools 1843
 Tarsus dilatation 977
 Tearing 1500
 Teeth disturbances 1703
 Telangiectases, 3394
 Temperature elevated 26
 in aged 930
 with chills 32
 with circulatory manifestations 1006
 cryptogenic in infancy and childhood,
 2 60
 with generalized rashes 1,
 with intrathoracic disorders 404
 due to metabolic causes 718
 in pregnancy 2612
 with relapses 28
 with skeletal disorders 192
 for unknown causes 26
 subnormal acute 2
 in med, 21
 Tenderness in calves 2303
 of chest wall 3331
 of vertebrae 2774
 feet 2903
 finger 2903
 hand 2908
 hip 2908
 muscle of breast 3331
 of skin 340
 thighs 2868
 in toes 2908
 in rectum 1913
 Testes 430
 Testes malignancies of 2444
 pain in, 2430
 Tertiary hypocalcemic 7 4
 Thiamine deficiency oral signs 1675
 Thickening of skin 340
 Thighs deformities, painless 2826
 pain in, 2368
 rash in generalized eruptions 172
 skin atrophy of 3402
 swellings painful 2806
 tenderness in, 2868
 Thinnings 700
 Thinning of skin, 3402
 Thoracic cage abnormalities by auscultation,
 354

- Thoracic cage abnormalities in movements and
 pulsations 3,28
 on palpation 3,31
 on percussion 3,38
 eruptions 3363
 pain 2910
 Thorax febrile disorders in 401
 pain in 2910
 Thrills at apex and base 3531
 continuous of chest 3331
 Throat abnormalities of 3600
 pain in 2971
 Thrombocytopenic purpura oral signs 1677
 Thumb dislocation, 2971
 Thyroid enlargement 3514
 Tic douloureux 2192
 facial 3506
 muscle 2683
 Tingling See *Acroparesthesia*
 Tinnitus 2141
 Tiredness 2,90
 Toes atrophy 3402
 clubbing 2978
 dermatoses 3296
 pain in 2908
 Tongue depigmentation in 3401
 disturbances 1687
 Toothache 1680 2132
 Topical depigmentation in 3401
 Torticollis 2818 3520
 Trachea disturbances 3512
 Trantudates 3738
 Tremors of muscle 2832
 Triangle position 3191
 Trifacial neuralgia 2132
 Trigeminal neuralgia 2132
 Trunk dermatoses of 3368
 maculopapular 3300
 rash generalized in eruptive fevers 173
 Tuberculosis oral signs 1672
 Tubular breathing 3512
 Tularemia rash in 173
 Tumors of abdominal wall 35 8
 of chest wall 3,23
 epigastric 1814
 of eye 1506
 gastric 1787
 of head in infancy 2771
 in hypogastrium 2671
 of inguinal region 3092
 of larynx 3606
 in left lower quadrant 1870
 in left upper quadrant 1819
 nasal 3590
 of neck 3514
 oral 1665
 of parotid gland 3517
 of right lower quadrant 1886
 of right upper quadrant 18,7
 of salivary gland 3517
 of scrotum 2441
 skeletal differential diagnosis 2630
 skin 3210
 solid abdominal's ciling and 1750
 of sublingual gland 3517
 of submaxillary gland 3517
 of throat 3600
 Twitchings of muscle 2683
 Tympanites 1878
 Tympany of chest 3533
 Typhoid fever oral signs 1670
 Typhus fever rash in 173
 Ulcers decubitus 3296
 gastric 1787
 nasal 3590
 oral 1664
 of skin 3218
 Umbilicus discharge from 3557
 pain in 1887
 Unconsciousness 1291
 Upper extremities deformities 29,4
 pain in 2898
 painless swellings 29,4
 Uremia 27 6
 Urethral discharge 2340
 Urgency of urination 2375
 Uric acid increased content in blood 731
 Urinary system azotemia 2276
 congenital malformations 2286
 obstruction 2 68
 uremia, 2276
 Urination See also *Urine*
 absence 2232
 decreased 2232
 frequency 2310
 increased 2231
 painful 2325
 suppression 2232
 Urine See also *Urination*
 albumin in 2370
 blood in 2,00
 color abnormalities 3677
 fructose in 3677 4401
 galactose in 3677 4401
 glycosuria 3676 4401 4107
 hematuria 2306
 hemoglobin in 2306
 hemoglobinuria 2306
 incontinence 226,2
 lactose in 3677 4401
 levulose in 3677 4403
 paradoxical incontinence 2261
 pigmentary changes in 4028
 proteose in 3673
 pus in 22,2
 pyuria 22,2
 reduction of Benedict solution 3677
 retention 2261
 sucrose in 3677 4401
 sugar in 3676 4402 410,2
 Urticaria 3346
 Vaccinia purpura in 3123
 Vagina itching 2,91
 bleeding metrorrhagia 2,6,2
 neonatal 2479
 in pregnancy 2661
 prepubertal 2479
 discharge 2,35
 Vapor poisoning 2,16
 Varicella oral signs 1670
 Variola, rash in 173
 Vascular disease peripheral 296
 disorders associated with fever 1636
 of neck 3,16
 Vein prominence in head, 2775

Vertebrae curvature 3060 3062

Vertigo 2020

Vesicles generalized, 422

localized, 3334

oral 1668

Vidian neuralgia 2192

Vision See also Eye

double 1528

fields disturbances of 1645

Visual acuity reduction in 1638

Vitamin deficiency oral signs 1675

Voice disturbances 3606

hoarseness 2160

Vomiting 1770

of blood 1764

in food poisoning 240

in infancy 2734

Von Gierke disease 721

Vulva, depigmentation in 3404

dermato = 290

itching 2594

swelling of 3378

WADDLE 3496

in childhood 2736

Walk See also Gait

disturbances in adult, 3496

in childhood 2736

Walk lumping in adult 2832

staggering 3585

Water hammer pulse 3580

Water head 2774

intoxication 705

Wax facies 3509

Weakness 2390

Weight gain 695

loss 700

in infancy 2784

Welts 3346

Wheals 3346

in infants and newborn 3146

Wheezing 2166

Whorrs of chest, 3534

White blood count elevation 1097

increased lymphocyte 1098

increased monocytes 1099

Whiteness of skin 3402

Whooping cough in infancy 2,30

Windpipe disturbances 3512

Witch's milk 578

Wrist rash generalized 17

Wryneck 3540

XERODERMA pigmentosum purpura in 3422

Xerosis 176 1691

GENERAL INDEX, VOLUMES I TO IV

NOTE: Bold face page numbers indicate main discussions

- Aorta** definition 1308
Abdomen, aorta, aneurysm of 993
 auscultation, 3567
 catastrophe acute, 1844
 contraction exercises 3-60
 dermatoses of diff diag (Table) 3363
 distention diff diag (Table) 1878
 postoperative prevention, 4005
 treatment, 4010
 examination, 3552
 in infancy 2733
 glands 1237
 injuries, 3232
 treatment, 30 3
 involvement in aortic lesions diff diag (Table) 904
 muscle layers 3553
 (Fig) 3553
 pain, 3555
 acute, in acute pancreatitis 1940
 epigastric diff diag (Table) 1788
 generalized, diff diag (Table) 1748
 hypogastric diff diag (Table) 2302
 in infancy and childhood, diff diag (Table) 2730
 in left lower quadrant, diff diag (Table) 1866
 in left upper quadrant diff diag (Table) 1912
 in pregnancy diff diag (Table) 2662
 in right lower quadrant, diff diag (Table) 1880
 in right upper quadrant, diff diag (Table) 1930
 umbilical diff diag (Table) 1887
 palpation 3552
 paracentesis, in congestive failure, 250
 procedure 1920
 percussion, 3567
 perforation in typhoid fever 231
 pregnancy 2660
 puncture diagnostic 1920
 technic 1823
 reflexes superficial 3555
 retraction, exercises, 5758 5759
 scout films 3741
 swellings epigastric, diff diag (Table) 1814
 generalized diff diag (Table) 1750
 in left lower quadrant, diff diag (Table) 1870
 in left upper quadrant, diff diag (Table) 1849
 in right lower quadrant, diff diag (Table) 1836
 in right upper quadrant, diff diag (Table) 19 7
 tenderness 3553
 tumors, generalized, diff diag (Table) 1750
 hypogastric, diff diag (Table) 2621
- Abdomen tumors in left lower quadrant, diff diag (Table) 1870**
 in left upper quadrant, diff diag (Table) 1849
 in right lower quadrant diff diag (Table) 1840
 in right upper quadrant, diff diag (Table) 1937
 viscera, anatomy 3553
 (Fig) 3553
 palpation, 3563
 wall, anatomy 355
 disturbances diff diag (Table) 3556
 movement 3554
 pigmentation, diff diag (Table) 3556
 in pregnancy 2623
 protrusion diff diag (Table) 3556
 retraction diff diag (Table) 3556
 rigidity involuntary 3554
 diff diag (Table) 1746
 voluntary 3554
 tonus 3554
 zones, 3553
Abdominogential bimanual examination (Fig) 3643 technic 3648
Abdomens in uritis 1647
Abortifacients 2511 2651 3397
Abortion 2649
 complete 2652
 dimensions of infant in, 2763
 habitual 2653
 treatment 2654
 progesterone in dosage 2512 2519
 illegal, 2650
 incomplete 2650
 inevitable, 2652
 treatment 2653
 missed, 2652
 self induced tetanus after 295
 septic, 2606 2653
 spontaneous, causes 2650
 therapeutic, 2649
 in cardiac invalid, indications for 364
 in rubella, 418
 in tuberculous 273
 threatened 2651
 treatment, 2653
 progesterone in, dosage 2518
 Abrasion, treatment, 3988
 Abruptio placentae 2663
 (Fig) 2668 2667
 Abscess, amebic 525
 jaundice in, diff diag (Table) 1954
 appendicular 1927
 of axillary sweat gland 3253
 diff diag (Table) 3253
 of brain, 1468
 in amebiasis 526
 otogenic, 2143

- Acrocyanosis diff diag (Table) 996
 Acrodermatitis chronica atrophicans 3366
 diff diag (Table) 3378
 Acrodynia 1500 3145
 diff diag (Table) 3162, 3250 3296 3392
 3439
 (Fig) 3143
 in infancy diff diag (Table) 3146
 Acromegaly 1156
 cardiac hypertrophy in (Table) 934
 diff diag (Table) 3304
 (Fig) 1157
 gigantism with 1158
 kyphosis in diff diag (Table) 3063
 ossification disturbances in diff diag (Table)
 2798
 pregnancy and, 2674
 Acromioclavicular dislocation 2976
 treatment (Table) 2971
 Atroparesis 3290
 diff diag (Table) 3214 3250 3296
 Atroderosis 3367
 diff diag (Table) 3296
 Atrophic dermatitis acute 3174
 diff diag (Table) 3162 3166
 dermatoses 3174
 diff diag (Table) 3382
 pigmentation diff diag (Table) 3242
 rays injuries due to 3173
 Actinomyces bovis, 489
 identification 487
 penicillin resistant, 111
 Actinomycetum 103
 Actinomycin A 103 115
 Actinomycin B 103 115
 Actinomyces 489
 clinical manifestations 490
 cutaneous lesions in 490 3309
 diagnosis 490
 diff diag (Table) 3218 3266
 of face 3310
 (Fig) 486
 of lung 491
 (Fig) 491
 of mandible 3309
 penicillin in 493
 of penis, 2458
 prognosis 492
 stomatitis in, 1697
 test in serologic (Table) 59
 skin (Table) 59
 treatment, 492
 Adamantinoma 1712
 (Fig) 1715
 Adam-Stokes syndrome 879 See also *Heart*
block
 Adaptation dark in vitamin A deficiency 619
 Addisonian crisis 1275
 treatment 1277
 Addison's anemia 1077
 disease 1271 See also *Adrenal cortical in*
 sufficiency
 differentiation from Simmonds disease
 1173
 clinical manifestations 1673
 (Fig) 1674
 pathology 1272
 pigmentation in 1273
 diff diag (Table) 8242
 pregnancy and 2675
 Addison's disease treatment 1276
 Adenine sulfate dosage (Table) 1049
 Adenitis cervical 2155
 complicating measles 414
 suppurative complicating tonsillitis 2155
 marginal, diff diag (Table) 3092
 Adenocarcinoma of colon 1883
 of stomach (Fig) 1315
 of uterus (Fig) 2502
 Adenofibroma of breast (Fig) 576
 Adenoid examination 3603
 facies 2140
 hypertrophy 2140
 Adenoidectomy indications for 3094
 Adenoiditis acute 2139
 Adenoma, acidophile See *Gigantism*
 adrenal cortical diff diag 1163 1164
 basophile 1160 See also *Cushing's syndrome*
 diff diag 1164
 (Table) 1163
 hypernatremia in, diff diag (Table) 730
 chromophobe 1175
 of colon (Fig) 1867
 of islands of Langerhans 1242
 of pancreas, 1943
 of parathyroid 1233
 of salivary glands 1716
 sebaceous 3148
 diff diag (Table) 3266
 (Fig) 3149
 in infancy diff diag (Table) 3146
 of nose diff diag (Table) 2110 3264
 pigmentation in diff diag (Table) 3156
 senile 3205
 sella turcica in (Fig) 1177
 thyroid iodide and 611
 toxic 1205 See also *Hyperthyroidism*
 theories on 1198
 of tracheobronchial tree 2075
 Adenomatosis toxic 1205 1210
 of thyroid gland 1211
 of uterus malignant 2363
 Adenomyosis 2358
 Adhesions peritoneal 1933
 Adhesive pericarditis 1010
 strapping application diagram 3069
 Adiposis dolorosa 1174 3206
 diff diag (Table) 693 3250
 (Fig) 1175
 Adipos genital dystrophy 1166 See also
 Pröhl's syndrome
 Adolescents anterior pituitary gland deficiency
 in 1166
 dermatose of diff diag (Table) 3360
 psychic effect of 3109
 female physiology 2479
 kyphosis in 2926
 round back 2926
 shoe for (Fig) 3083
 Adrenal(s) 1263
 cortex, 1265
 activity hypernatremia in, diff diag
 (Table) 730
 amyloidosis, 1273
 anatomy 1266
 atrophy 1279
 clinical disturbances 1278
 deficiency 1266 See also *Adrenal cortical*
 insufficiency
 diabetes 1247

- Abscess of brain rhinogenic 2129
 of breast 3977
 incision (Fig) 3978
 treatment 3978
 crypt 3980
 dento-alveolar 1704
 in erysipelas 170
 extradural 1468
 eyelid 1609
 liver 1990
 amebic 375
 (Fig) 323
 jaundice in diff diag (Table) 1954
 pain in right upper quadrant diff diag (Table) 1059
 lung See Lung abscess
 pelvic 1928
 perianal 3979
 periapical 1705
 pericolic 1028
 pericoronar (Fig) 1696
 perihaptic 1938
 perinephric 2360
 pathology 2359
 swellings of back in diff diag (Table) 2822
 perirectal 1813
 peri urethral, 2300
 renal 2353
 retropharyngeal 2156
 complicating scarlet fever 179
 of spinal cord 1489
 staphylococci in 152
 subdural 1468
 subphrenic 1998
 Thornwaldt's 2140
 of tongue 1707
 of tonsil 2165
 complicating scarlet fever 170
 in infancy diff diag (Table) 2732
 Absorbents magnesium salts as 618
 Acanthoecilonema 3341
 Acanthosis definition 3101
 nigricans 3355
 of avilla diff diag (Table) 3253
 (Fig) 3356
 ophthalmic manifestations 1564
 pigmentation in diff diag (Table) 3164
 Acapnia 3830
 Acarus scabiei, 3180
 (Fig) 3181
 Accelerator nerve function 779
 Acclimatization fever 480
 Accommodation of eye disturbances 1637
 examination 3614
 (Fig) 1556
 mechanism 1535
 Acetaminid evaluation, 3833
 toxicology 3836
 Acetarsone in pemphigus dosage 3409
 Acetone odor in diabetes mellitus 1674
 Acetophenetidin evaluation 3833
 in infancy dosage 2742
 Acetylation sulfonamide and 90
 Acetyl beta methycholine chloride in skin diseases dosage 3112
 Acetylcholine evaluation, 3874
 shock from 936
 Acetyl phenyl hydrazine dosage (Table) 1049
 Acetyl salicylic acid dosage (Table) 3332
 Acetyl salicylic acid in infancy dosage 2742
 in rheumatic fever dosage 195
 Achalasia See Cardiospasm
 Achilles bursitis 2904
 reflex (Table) 3584
 tendon contracture 3091
 Achlorhydria glossitis with 1681
 in pernicious anemia 1078
 Achondroplasia, diff diag (Table) 693 2729
 2798 2878 2930
 macrocephalus from diff diag (Table) 2774
 Achorion identification 437
 schoenleinii 3304
 Achrestic anemia 1083
 Achromatopsia, diff diag (Table) 1535
 Achromia parasilaria, 3300
 Achylia gastrica definition 1768
 Acid See under specific name of acid
 ash diet 680
 milks in infant feeding 2754
 Acid base equilibrium disturbances, 2281
 Acid fast bacilli in gastric contents 3726
 stain technic, 52
 Acid producing salts as diuretics 2230
 Acidified milk 636
 Acidity gastric chemical examination 3723
 histamine test in, 1744
 Acidolite evaluation 3133
 Acidophile cells of anterior pituitary gland, by
 persecretion 1153
 Acidophilus milk 637 1826
 Acidosis 720 2231
 diabetic 1251
 treatment 1257
 diff diag (Table) 721
 fever in, 24
 hyperglycemia in diff diag (Table) 733
 in mercury poisoning 766
 postoperative treatment, 4007
 sugar in, 691
 therapeutic 699
 treatment 721
 urine test for (Fig) 3678
 Acne bacillus vaccine, evaluation 78
 keloid 3253
 necrotica 3356
 pustular (Fig) 3353
 rosacea, 3357
 diff diag (Table) 3162 3266
 (Fig) 3359
 of nose diff diag (Table) 2110 3264
 ophthalmic manifestations 1564
 sulfur lotion in prescription 3129
 variiformis 3356
 diff diag (Table) 3266 3354
 of nose diff diag (Table) 2110 3264
 vulgaris 3368
 diet in, 3366
 diff diag (Table) 3266 3334 3360 3368
 (Fig) 3359
 of nose diff diag (Table) 2110 3264
 prescriptions for 3364
 Acneiform dermatoses, 3366
 eruptions due to drugs 3338
 Acute toxicity 3833 3866
 Acquired immunity 73
 Acriflavine in skin diseases dosage, 3112
 Acriviolet, in respiratory disturbances, dosage,
 2029
 Acrocyanosis 1000

- Albinism 3401
 definition 1560
 in infancy diff diag (Table) 3146
 Albright's syndrome 2524
 radio-translucency in diff diag (Table) 2807
 Albumin, serum 81
 Albumin globulin ratio of serum (Table) 5
 Albuminuria 2370
 in acute glomerulonephritis 2377
 in backward failure 944
 diff diag (Table) 2370
 in erysipelas 169
 in lobar pneumonia 2179
 orthostatic 2204
 test for 3672
 in plumbism 763
 in Rocky Mountain spotted fever 378
 tests for technic 3672
 interpretation 3672
 in yellow fever 477
 Alcohol 3246
 acid office preparation of 49
 concentration in blood 3848
 ethyl office preparation of 49
 food value of 656
 injection in thrombo-angitis obliterans 1031
 in treatment of sebaceous cyst 3208
 in trigeminal neuralgia 1482
 meal, 3723
 pharmacology (Table) 3847
 in skin diseases 3113
 as stomacheic 1 57
 therapeutics (Table) 3847
 Alcoholic Anonymous 3853
 beverages 3846
 in angina pectoris 893
 composition (Table) 855
 in diabetic 1254
 in hypertension 918
 in peptic ulcer 1781
 in peripheral vascular disease dosage 999
 in pregnancy 2632
 in treatment for syphilis 319
 in tuberculous 369
 in weight loss 701
 hallucinose 3351
 psychose 1384
 Alcoholism acute 3948
 clinical manifestations (Table) 3849
 ophthalmic manifestations 1595
 treatment 3849
 arterio sclerosis 978
 chronic, 138 4 1
 treatment 561
 surgery and 3998
 Aleppo bowl, 3319
 Alimentary allergen, tests for 559
 Alkali reserve disturbances of 720
 Alkaline ash diet, 681
 in urinary calculi 2320
 Alkali 728
 diff diag (Table) 722
 electrocardiographic changes in, 808
 (Fig) 835
 hypocalcemia in diff diag (Table) 724
 renal complications in, 2373
 Alkaptonuria diff diag (Table) 3677
 All or none response of heart, 773
 Allen Dossy test 2515
 Allergen, alimentary tests for 559
 Allergic arthropathy diff diag (Table) 2378
 colitis 1811
 conjunctivitis 1619
 disturbances of respiratory system 2096
 sneezing in diff diag (Table) 2064
 paranasal sinusitis 2101
 response in pernicious anemia, 1032
 shock 938
 due to injection 3774
 Allergist, 3901
 Allergy 547
 bacterial 532
 clinical manifestations, 553
 complications in 54
 desensitization in 563
 diagnosis 554
 diarrhea in diff diag (Table) 1840
 drug 549
 edema 713
 elimination therapy in 563
 eosinophilia in diff diag (Table) 542
 epinephrine in, 3879
 etiology 548
 food elimination diets in, 562
 histery 551
 hypopyrexia in (Table) 22
 in infancy diff diag (Table) 2731
 list, 2758
 insulin 124
 involuntary nervous system and (Table) 1396
 joint pain in diff diag (Table) 280
 mechanism 547
 ophthalmic manifestations, 1598
 osalmantations 1669
 pathogenesis 547
 physiocal, 3351
 pruritus and in diff diag (Table) 1916 3170
 psychotherapy in, 565
 serum 8
 skin 3379
 special consultation in 561
 streptococcal 163
 substitution therapy in 563
 surgery in 561
 syphilis and 334
 tearage in, diff diag (Table) 1525
 tests 54
 contact or patch 556
 diagnostic, 33 9
 interpretation 561
 intracutaneous 57
 (Fig) 558
 interpretation 557
 ophthalmic 556
 (Fig) 554
 Fraunholz-Küstner 559
 scratch 557
 (Fig) 55
 treatment, 563
 All in (Table) 103
 Allochrysis in rheumatoid arthritis, 2922
 Allosandrite 1246
 Almeida's disease 5314
 Alopecia 18 3
 vera in skin diseases preparations 3113
 Alpeca, 3440
 ata 3445
 diagnosis 3447

- Adrenal(s) cortex excess circulatory disturb-
 apnea in (Table) 955
 extract in gravitation shock 925
 in pemphigus 3109
 therapeutics 3326
 fluid balance and 704
 hematochromatosis 1279
 hemorrhage 1280
 hormones 1267
 preparations 1267
 therapeutics 1268
 hyperfunction, 1268
 hyperglycemia in diff diag (Table)
 733
 hypopotassemia in diff diag (Table)
 731
 insufficiency 1271
 basal metabolism in diff diag (Table)
 719
 circulatory disturbances in (Table) 955
 cutaneous manifestations 3240
 gravitation shock in 925
 hyperpotassemia in, diff diag (Table)
 731
 hypochloremia in, diff diag (Table) 732
 hypoglycemia in diff diag (Table) 734
 hyponatremia in diff diag (Table) 729
 hypopyrexia in (Table) 21
 in hypotension diff diag (Table) 917
 oral manifestations 1673
 (Fig) 1074
 pigmentation in 9 1273
 pregnancy and 2675
 sodium chloride in 593
 shock in 933
 weight loss in (Table) 700
 necrosis 1280
 physiological disorders 1263
 physiology 1266
 tumors 1278
Lushing's syndrome vs 1164
 diff diag (Table) 910
 glands 1263
 apertomy 1266
 tuberculosis 1272
 medulla 1263
 emergency theory Cannon's 1263
 tumors 1261
 virilism 1268
 treatment 1271
 Adrenergic drugs 1394 3976
 in shock prevention 939
 effect inhibitors 1394 3883
 nervous system 4 1391
 Adrenogenital syndrome 1263
 Adult gastro-intestinal flora in 143
 normal diet for 669
 size diminution in diff diag (Table) 694
 Aedes as vector (Table) 42
 Aerobacter aerogenes streptomycin in 111
 Aerobes facultative definition 140
 obligatory definition 140
 Aerophagia definition 1790 1768
 Aerosolization 2041
 Alebrile infections fever in 23
 skin eruptions diff diag (Table) 178
 Affect definition 1300
 disturbances 1300
 Afibrinogenemia 1118
 African relapsing fever 357
 African sleeping sickness 531 See also Trypan
 osomiasis
 After shaving lotion prescription, 3142
 Agar agar 1826
 Age endocrinopathy and, 1144
 incidence in common cold 391
 in peripheral vascular disease (Table) 995
 in the atherosclerosis (Table) 1502
 in tuberculosis subclinical 258
 in whooping cough, 278
 surgical risk and 3997
 Age weight height tables for boys, 3481
 for children preschool 3480
 for girls 3482
 for men 3493
 for women 3484
 Aged bathing contraindications in, 3151
 common dermatoses of diff diag (Table)
 3214
 diet for 664
 febrile disorders of (Table) 980
 Agnesia, cerebral 1403
 Agglutination tests 56
 in brucellosis 317
 in cholera 250
 interpretation 56
 in pertussis 281
 (Fig) 87
 rapid slide method 56
 in tuberculosis milary 261
 Vidal 235
 (Fig) 57
 Agglutinin definition 143
 in diagnostic tests (Table) 50
 in infectious jaundice 363
 in meningococcus, 209
 tests cold 3711
 technic 3710
 Agglutininogen A and B 3703
 M and N 3709
 definition, 143
 Aggressiveness, bacterial, virulence and 143
 Agitation definition, 1900
 Agnosia definition 1293
 Agnucloytic angina See Apranucloytic
 Agnucloysis 1096
 acute due to amidopyrine 1096
 due to sulfonamides 96
 blood studies in, 1039
 bone marrow count in (Table) 1913
 oral manifestations 1677
 treatment, nucleic acid in 1099
 Ague 307 See also Malaria
 Aikman 3379
 diff diag (Table) 3296
 (Fig) 3370
 Air insufflation perineal in virilism 1270
 indications 2245
 passages in newborn care 2746
 pulmonary definition 2014
 sickness 3376
 swallowing 1720
 tidal definition 2014
 Air borne infections hemolytic streptococci in
 161
 ultraviolet ray in control of 167
 Airplane splint 3018
 (Fig) 3019
 Alastrim 424 See also Smallpox
 Albers-Schönberg disease See Osteopetrosis

- Amylase in digestion 358
 Amyloid in glomerulus (Fig) 8
 infiltration definition 7
 Amyloidosis of adrenal cortex 1979
 Congo red test in 7
 definition 7
 differentiation from myxedema, 1196
 edema in 707
 diff diag (Table) 717
 (Fig) 8
 hepatic 1978
 hypertension in diff diag (Table) 910
 renal 2363
 diff diag 2364
 skin in 3243
 Amylum in prunus 3128
 Amyotonia congenita, diff diag (Table) 2887
 (Fig) 2895
 Amyotrophic lateral sclerosis 2886
 Amytal dosage (Table) 5836
 in infancy dosage 2745
 Anabolism 6
 Anacidity definition 1768
 butamine test in 3892
 Anaerobes facultative definition 140
 obligatory definition 140
 Anaerobiosis of nails 3455
 treatment, 3455
 Anal See also Anus
 canal frontal section (Fig) 3564
 disturbances incontinence of feces in, diff
 diag (Table) 1916
 Esure 1914
 cauterization 3948
 fistulas 3380
 (Fig) 3980
 swab in worm infestation (Fig) 1903
 Analgesia barbiturates in (Table) 3841
 in coronary occlusion, 987
 in minor surgery 8950
 in shock prevention 938
 Analgesic antipyretics 3832
 doses (Table) 3832
 prep rations (Table) 3832
 Analgesic() asphyxia neonatorum and 2767
 block technic 3307
 Epsom salts as 613
 in infancy dosage 2742
 magnesium sulfate as 614
 in menstrual cramp 2446
 prescriptions 3835
 in weight loss 701
 wet dressing technic 3135
 Analysis distributiv in psychotherapy 1327
 Anaphrodisiacs 2512
 Anaphylactic antibody definition 547
 shock, 549 936
 allergen in 553
 Anaphylactogen definition 547
 Anaphylactoid purpur 3424
 diff diag (Table) 3346 3395
 symptoms in arsenamine therapy 122
 Anaphyl toxin, definition 547
 Anaphylaxis definition 547
 speed shock and 924
 Anasarca definition, 11
 diff diag (Table) 717
 Anastomosis 1832
 Anayodin, 530
 Ancylostoma, morphology (Table) 3732
 Ancylostomiasis 1903 See also Hookworm dis-
 eases
 Anderson spl nt in sternoclavicular dislocation
 2974
 Androgen 2401 2404
 carcinogenic influence 2418
 physiology 2405
 preparations in skin diseases evaluation
 3115
 therapeutics 2405 3826
 therapy in breast cancer 2407 2583
 in Cushing's syndrome 1164
 in female 2406 2520
 in male climacteric, dosage 2417
 in premenstrual tension, 2486
 in primary hypogonadism dosage 2416
 in suppression of lactation 2520
 untoward effects 2417
 Androgen-trogen ratio dislocation of in fe-
 male 2527
 in male 2418
 Androgenic drugs, 2404
 Androsterone 2404
 Anemia(s) 1055
 achrestic 1085
 acquired diff diag (Table) 1080
 Addison's 1077
 aplastic 1090
 bone marrow count in (Table) 1043
 oral manifestation 1676
 aregenerative 1090
 in azotemia 2279
 in bacillary dysentery 245
 Biermer's 1077
 blood cholesterol in 738
 in Carrion fever 385
 causes of 1056
 cerebral 1436
 diff diag (Table) 1437
 of childhood diff diag (Table) 1087
 in chronic gastritis 1810
 definition 10
 diet in 1052
 diff diag (Table) 1058
 drepanocytic 1065
 due to bone marrow defects 1090
 chemicals 1090
 maturation factor 1076
 medicines 1090
 in endocarditis 1092
 fever in 25
 diff diag (Table) 718
 in food poisoning diff diag (Table) 240
 goat's milk 1088
 hemolytic 1060
 acquired, 1064
 acute of childhood 1073
 of pregnancy 2546
 in sulfonamide therapy 25
 bone marrow count in (Table) 1043
 chronic, familial, 1061
 (Fig) 1062
 diff diag (Tables) 1053 1060
 due to sulfonamides 1065
 in malaria 509
 in promin therapy 25
 secondary 1064
 in hookworm disease 1905
 hyperchromic macrocytic, 1077 See also Per-
 nicious anemia

- Alopecia areata**, diff diag (Table) 3439
 (Figs) 3441
 nails in 3456
 treatment, 3447
 cantharides in prescription 3116
 caused by drugs 3443
 cicatrizzata 3442
 diff diag (Table) 3439
 congenital 3440
 diff diag (Table) 3214 3439
 premature 3444
 sende 3444
 symptomatic 3442
 syphilitic, 3485
 (Fig) 3441
- Alpha lobeline** in asphyxia neonatorum 2770
 in infancy dosage 2744
- Alpha tocopherol**, 629
 in lateral sclerosis 2886
 therapeutics 3875
- Altitude** hematologic variations due to 1042
 syncope 926
- Alum** as anidrotic prescription 3115
- Aluminum hydroxide** in gastric medication, 1735
 gel in tetany 726
 subacetate in dermatoses preparation 3115
- Alurate** dosage (Table) 3836
- Alypin** 3015
- Alzheimer psychosis** 1581
- Amaranth** Palmer's geographic distribution of (Fig) 560
- Amaurosis** 1638
- Amsurotic family idiocy** 1412
 abnormal joint motility in diff diag (Table) 2808
 cherry red spot in 1412 (Fig) 1413
 diff diag (Table) 1833
 microcephalus in diff diag (Table) 2774
 ophthalmic manifestations 1684
- Ambivalence** definition 1300
- Amblyopia** diff diag (Table) 1638
 due to poisoning 1595
 due to quinine 518
 toxic due to trypanamide administration 120
- Ambulation** early 4122
- Amebae** 527
- Amebae characteristics** (Table) 528
- Amebiasis** 523
 brain abscess in 526
 carriers 524
 treatment 531
 chiniofon in 530
 clinical manifestations 524
 diagnosis by smear in (Table) 50
 emetine in 529
 liver abscess in 525
 pulmonary diff diag (Table) 405
 serologic test in (Table) 59
 stool examination in 526
 (Fig) 528
 treatment 527
 ve ical 2342
 viroform in 88
- Amebic dysentery** 523 See also *Amebiasis*
 diff diag (Table) 240
 of newborn diff diag (Table) 2782
 Amenorrhea diagnostic significance, 2617
- Amenorrhea** diff diag (Table) 2618
 ovarian tumors and 2575
 in Simmonds disease 1171
 in tuberculous pneumonitis 2202
- Amentia** definition, 1292
- American diet** 633
- leishmaniasis** 3317
 (Fig) 3317
 typhus 375
 worm seed, 1896
- Amigen** 594
- Amino acid** in blood (Table) 5
 therapeutics 3825
- Amino-acetic acid** effect on muscle 3885
- Aminophylline** in asthma dosage 2103
 in complete heart block, 880
 in coronary occlusion, 938
 dosage 3866
 in hypertension 912
 in infancy dosage 2743
- Aminopyrine** agranulocytosis due to 1096
 drugs containing list 1006
 evaluation 3833
 in infancy dosage 2743
 ophthalmic manifestations due to 1595
 in rheumatic fever dosage 195
 skin reactions caused by 3359
- Ammonia pharmacology** 614
 poisoning clinical manifestations (Table) 746
 diagnosis (Table) 746
 occupations susceptible to (Table) 745
 treatment (Table) 746
- Ammoniated mercury ointment** 3308
 in acne varioliformis, 3357
- Ammonium chloride** in congestive failure 949
 in premenstrual tension dosage 2436
 therapeutics, 3923
 citrate iron and dosage (Table) 1045
 compounds 614
 salts as diuretics dosage 2259
 sulfate in neuralgic pain 3890
 therapeutics 3824
- Amnesia** definition 1298
- Amnion**, 2668
- Amphetamine** 3869 3882
 in respiratory disturbances dosage 2623
 sulfate in complete heart block, 880
 dosage, 3877
 in gravitation shock, 923
 in hay fever 2098
 in infancy dosage 2744 2746
 in manic depressive psychoses 1371
 in obesity 698
 in rhinitis 2116
 therapeutics 3870 3883
 toxicology 3870 3882
- Amphoric breathing** 3540
 diff diag (Table) 3542
- Amphoteric substances** 1755
- Ampulla of Vater carcinoma** 1996
- Amputation** 2812
 in arterial occlusion, 999
 cryotherapy in 3785
 emergency 3955
 of forearm (Fig) 3964
 of lower extremity (Fig) 3965
 in osteogenic sarcoma, 2845
 Amyl nitrite in angina pectoris 893
 therapeutics 3893

- Angioma of scalp diff diag (Table) 3254
 senile 3202
 simple 3200
 of tongue 1715
 Angioneurotic edema, 3349
 allergen in 333
 diff diag (Table) 3266
 due to drugs 3339
 of genitals diff diag (Table) 3274
 of larynx, 2101
 of scrotum 2460
 symptoms in arsphenamine therapy 12°
 Angiorthaphy indications for 3395
 Angiosarcoma, 3226
 Angioscotometry 1543
 Angospasm cerebral, diff diag (Table) 1437
 functional vs organic 791
 in hypertension 907
 meholyl in 3874
 Angiotonin, 1149
 in hypertension, 901
 inhibitors 1149 2273
 in renal ischemia 2273
 Anhydremia 704 See also *Dehydration*
 Anidra = 346°
 in dermatoses 3462
 in systemic disorders 346°
 Androtic(s) 3113
 bath, technic 3133
 powder prescription 3463
 prescriptions 3142
 tannic acid as prescription 3139
 Aniline eye disturbances caused by 1595
 Animal bites 3180
 inoculation in diagnosis (Table) 62
 Anions, pharmacology 3823
 therapeutics 3823
 Anisocoria 1533
 Anisometropia 1837
 Ankle dislocation, 2931
 treatment (Table) 2977
 examination (Table) 3374
 fracture 3048
 complications 3051
 tube cule = 2945
 (Fig) 2945
 valgus (Fig) 2850
 Ankyloblepharon etiology (Table) 1569
 symptoms (Table) 1569
 Ankylosis diff diag (Table) 2810
 of temporomandibular joint 1689
 (Fig) 1688
 Annulopapular syphiloderma 2285
 Anonychia 3451
 Ano-perineal pain diff diag (Table) 1913
 Anopheles in malaria 509
 (Table) 4
 Anophthalmos definition, 1560
 Anorectal conditions treatment 1910
 manifestations of venereal diseases 1912
 Anorexia in Addison disease 1273
 control of in w ht loss 701
 definition 130
 diff diag (Table) 1779
 nervous basal metabolism in diff diag
 (Table) 719
 definition, 1763
 differentiation from Simmonds disease
 1174
 hypoglycemia in diff diag (Table) 734
 Anorexia in Simmonds disease 1171
 treatment 1773
 Anoscopy 1907
 Anosmia, diff diag (Table) 2120
 Anoxemia 3327
 in lobar pneumonia 2174
 Anoxia, 3327
 acute, myocardial, 890
 in cardiac dilatation 871
 clinical manifestations 3327
 in congenital heart disease 963
 types of 3327
 Anoxic anoxia, 33°7
 Antacids 1754
 in gastric neuroses 1775
 magnesium salts as 613
 powders 1755
 Antagonism of drugs 3311
 Antemetics 1758
 Antergan 564
 Anteroposterior spinal curves development,
 3055
 Anthelmintics 1894
 (Table) 1893
 Anthelone 18 1
 Anthelmintic in filariasis dosage 3325
 toxicity 3 25
 Anthrahn in psoriasis prescriptions 34°0
 Anthrax 292
 animal inoculation in (Table) III
 antiserum 293
 bacilli, in woolsorter's disease 2190
 chemotherapy in, 293
 culture (Table) 54
 cutaneous manifestations (Table) 3246
 diagnosis 292
 methods of (Table) 3246
 by smear (Table) 50
 diff diag (Table) 3 66 3334 3378
 effect of sulfonamides on, 9°
 (Fig) 3273
 fly as vector in (Table) IV
 malignant pustule 3272
 neocarphenamine in, 293
 (Fig) 293
 pe icillin in, 111 293
 surgery in 294
 treatment 293
 Antibacterial serums for passive immuniza-
 tion, list III
 Antibiosis 37
 Antibiotic agents, 10... See also names of agents,
 e.g. Penicillin streptomycin,
 preparations (Table) 103
 therapy See also *Chemotherapy* and specific
 agents
 desperation 114
 indications 11°
 probatory 114
 Antibodies 75
 response to streptococci 151
 Ant body antigen reaction, 74
 Anticoagulants 1043
 in cerebral embolization, 1444
 in infancy dosage 2742
 in intravascular thrombosis 1125
 list 3397
 Anticonvulsants in infancy dosage 2743
 Antid stress effect of pitressin, 1179
 Antidiuretics list, 3397

- Anemia(s) hyperchromic symptomatic 1083
 hypochromic idiopathic 1089
 hypoplastic 1090
 in hypotension diff diag (Table) 917
 of infancy 1088
 diff diag (Table) 1087
 iron-deficiency 1085
 ischemia in (Table) 955
 Lederer's 1073
 leuko-erythroblastic 1091
 Mediterranean 1071
 miner's 1903 See also *Hookworm disease*
 myelophthous 1091
 in myxedema 1106
 of newborn congenital 1069
 pernicious 1077 See also *Pernicious anemia*
 of pregnancy diff diag (Table) 1089 2646
 hyperchromic, macrocytic 2646
 hypochromic 1088 2645
 physiological 1088
 primary 1077 See also *Pernicious anemia*
 in rheumatic fever 189 191
 in Rocky Mountain spotted fever 378
 sickle cell 1063
 sinus tachycardia in 874
 of spinal cord 1448
 splenic 1181 1976
 symptomatic hyperchromic 1063
 syncope in 923
 target cell 1071
 in telangiectasis 3203
 tropical macrocytic, 1083
 varieties 1086
 von Jaksch 1073
 Anemic nervous 3203
 Anencephaly 1407
 Anergy 3399
 Anesthesia acidosis of diff diag (Table) 791
 asphyxia neonatorum and 2760
 basal in obstetrics 2678
 barbiturates in, 3841
 (Table) 3915
 caudal 3922
 in obstetrics 2680 See also *Caudal anesthesia*
 dental 1602
 in gallbladder surgery 1991
 general barbiturates in (Table) 3841
 in fracture (Table) 2985
 in major surgery 4002
 in minor surgery 3923
 infiltration 3917
 in obstetrics 2680
 in Pott's fracture (Fig) 2990
 technic 3917
 inhalation 3924
 in obstetrics 2679
 shock from 935
 intravenous 3925
 local advantages 3913
 digital block 3919
 disadvantages 3914
 field block 3917
 (Fig) 3918
 infiltration 3917
 in minor surgery 3913
 nerve block, 3919
 technic 3916
 topical 3916
 in major surgery 4002
 Anesthesia in minor surgery 3913
 obstetrics 2578
 barbiturates in (Table) 3841
 in reduction of dislocation 2905
 shock prevention and 937
 skin due to cranial nerve injury 1481
 spinal 3922 See also *Spinal anesthesia*
 topical 3916
 of trigeminal 1483
 in tuberculous patients 272
 Anesthetics inhalation, evaluation, 3927
 local for eyes, 1348
 poisoning treatment 3925
 in shock prevention 938
 Anesthetist 3929
 Anetoderma erythematodes 3103
 Aneurysm 1026
 aortic 933
 causes (Table) 968
 manifestations (Table) 968
 arteriovenous 1455
 causes (Table) 969
 manifestations (Table) 969
 cardiac contour in (Fig) 797
 of cavernous sinus ophthalmic manifesta-
 tions 1586
 cerebral 1441
 causes (Table) 968
 manifestations (Table) 968
 dissecting of arteriosclerosis 993
 in hypotension diff diag (Table) 917
 fluoroscopic examination 796
 in periarteritis nodosa 1023
 of ventricle 993
 (Fig) 797
 manifestations (Table) 968
 Aneurysmorrhaphy 3995
 Angitis nonspecific 1097
 visceral 1019 1027
 Angina aggranulocytic 1090
 Ludwig's 1708
 pectus 890
 in backward failure 943
 circulatory abnormality and 779
 electrocardiogram in, 893
 (Figs) 817 818 843
 in hypertension 906
 nitrates in 3892
 pain in diff diag (Table) 2998
 precordial in diff diag (Table) 893
 paravertebral nerve block in 896
 prophylaxis 891
 syndrome 890
 treatment 893
 scarlatal (Fig) 177
 Angiography 861
 in peripheral vascular disease (Table) 996
 Angioma 3200
 cavernous 3202
 (Fig) 3200
 cephalhematoma and diff diag 2773
 diff diag (Table) 3210 3214 3266 3268
 of eye manifestations (Table) 1566
 in infancy 3201
 diff diag (Table) 3149
 of lip 1715
 of nail 3454
 of neck diff diag (Table) 3251
 of oropharynx 2070
 pigmentation in diff diag (Table) 3151

- Aplastic anemia 1090
 Apnea d f f diag (Table) 2014
 neonatal, treatment, 2769
 Apomorphine dosage (Table) 3834
 hydrochloride in vagal stimulation, 883
 Apoplexy cerebral 1439
 thyroid 1222
 Apothecary weight tables, 3903
 Appendectomy 1883
 indications for 3994
 Appendicitis 1881
 acute differentiation from hydronephrosis 2285
 chronic, 1883
 d f f diag 1884
 in infancy 1884
 d f f diag (Table) 2730
 pain in, 1882
 pathology 1881
 in pregnancy 1884
 recurrent, 1883
 Appendicostomy indications for 3993
 Appendicular abscesses, 1927
 Appendix, actinomycosis of 492
 anatomy 1881
 verruiform anatomy 3564
 Appetite, definition, 1302
 disturbances 1302
 d f f diag (Table) 1776
 loss of See *Anorexia*.
 Aprosma, definition, 1296
 Aralen 522
 Arachnitis adhesive 1448
 syphilitic, 1640
 Arachnidism 8197
 Arbonization block 880
 Arch support 3081 (Fig) 3080
 Arcus senilis (Fig) 1593
 site (Table) 1691
 Aregenerative anemia 1090
 Argyll Robertson pupil in general paresis 1378
 in tabes dorsalis 1465
 Argyna, d f f diag (Table) 3242
 in silver therapy 156
 Aristol, evaluation 3180
 Arm See also *Extremities upper*
 amputation (Fig) 3954
 deformities, d f f diag (Table) 2954
 dermatoses d f f diag (Table) 3378
 dislocations, 2975
 treatment (Table) 2971
 elephantiasis cause (Table) 969
 manifestations (Table) 969
 fracture 3021
 treatment (Table) 3014
 involvement in peripheral vascular disease (Table) 996
 joints tuberculosis 2945
 legs and, pulse difference in, d f f diag (Table) 918
 painless swellings of d f f diag (Table) 2954
 pulse difference in d f f diag (Table) 918
 Armpit preparations, prescriptions 3142
 Army foot powder 3129
 intelligence tests, 1325
 method of arsenotherapy in syphilis, 346
 of venereal prophylaxis, 3122
 Arneth leukocyte index, 3704
 Aromatic waters, 3820
 Arrhenoblastoma, d f f diag 1164
 (Table) 1163
 of ovary 2575
 (Fig) 2574
 Arrhythmia, cardiac 873
 in backward failure 943
 types, 873
 valvular defect predisposing to 972
 sinus 877
 Arsenicals 116
 bone marrow depression due to 123
 compounds carcinogenicity 3215
 organic, 116
 hepatitis due to 122, 1064
 acute, electrocardiographic changes in 809
 inorganic, 125
 action, 125
 therapeutics 126
 keratoses, 3216
 d f f diag (Table) 3166
 nervous system reactions due to 123
 ophthalmic manifestations due to 1595
 organic 116
 choice of 125
 comparison (Table) 124
 efficacy 124
 trivalent, 116
 pentavalent, chemical structure of 120
 pharmacology of 125
 pigmentation due to d f f diag (Table) 3242
 poisoning antidote, 125
 clinical manifestations (Table) 732
 diagnosis (Table) 732
 occupations susceptible to (Table) 732
 treatment (Table) 732
 secretion of 121
 shock from, 933
 in skin diseases evaluation, 3113
 skin reactions due to 122 3359
 therapeutics 121
 toxicology 122
 trioxide 125
 Arsenotherapy choice of drug in 125
 in coronary artery syphilis, 1012
 in dermatitis herpetiformis 3372
 in fusospirochetosis 356
 in Haverhill fever 363
 in idiopathic multiple hemorrhagic sarcoma, 3227
 in leprosy 277
 in leukemia, 1106
 in lymphosarcoma, 3227
 mitrioid crisis in, 924
 in pemphigus 3109
 in syphilis, 342
 cooperative clinical group method of 344
 massive dose, care of patient in, 345
 evaluation, 343
 Herxheimer fever in, 342
 toxicity in, 342
 in treponematoses, 121
 Arsenous acid 125
 Arsenepoisoning clinical manifestations (Table) 746
 diagnosis (Table) 746
 occupations susceptible to (Table) 746
 treatment (Table) 746
 Arsenphenamide, 116
 absorption, 120
 action, 121

- Antidote universal in infancy 2745
- Antigen(s) 143
 formation bacteria and 143
 in immunology 74
 list of 78
- Antigen antibody reaction 74
- Antihemolytic fraction, 1048
- Anti histamines 563
- Anti infective agents 87 See also *Chemo-therapy*
- Antimalarials 516
- Antimony 132
 in leishmaniasis 3320
 pharmacology 132
 poisoning clinical manifestations (Table) 762
 diagnosis (Table) 762
 diff diag (Table) 240
 occupations susceptible to (Table) 752
 treatment (Table) 762
 and potassium tartrate 133
 preparations 133
 in filariasis 3305
 shock from 833
 sodium thioglycolate 133
- Antiprotrombin 1109
- Antipruritics 3344 3349
 bath technic 3133
 ointments prescription 3136
 prescription 3135
 in toxic hepatitis 1965
 wet dressings technic 3135
- Antipyresis 20
- Antipyretic(s) analgesic 3333
 administration 3334
 therapeutics 3335
 toxicology 3334
 in infancy dosage 3742
 in tuberculosis 271
 in typhoid fever 237
 water as 586
- Antipyrine evaluation 3335
 skin reactions caused by 3339
- Antirennin in hypertension 901
- Antiscorbutic vitamin 627 See also *Vitamin C*
- Antiseptic(s) 3112
 bath technic 3133
 in infectious diseases 68
 urinary 2256
 wet dressing technic 3134
- Antiserum See *Serum*
- Antispasmodics 3029 3392
 in biliary dyskinesia, 1990
 in bronchial asthma dosage 2032
 in cystitis prescription 3245
 Epom salts as 613
 in infancy dosage 3743
 in urinary colic, 2062
- Antituberc drugs 1211
- Antitoxin serums homologous 82
 heterologous list 83
- Antitoxin administration penicillin and 114
- Antivenom 83 3197 3203
- Antal lavage in sinusitis 2128
- Antiotomy in chronic hypertrophic rhinitis 2120
 indications 3993
- Antutrin growth 3826
- Anuria calculous 2315
 diff diag (Table) 2232
- Anuria in glomerulonephritis, 2377
 in mercury poisoning 766
 postoperative treatment 4018
- Anus See also *Anal*
 anatomy 3363
 artificial 1835
 chancres of (Fig) 335
 clinical disturbances 1911
 examination, methods 1907
 hygiene 1909
 imperforate congenital, 1911
 in infancy examination, 2733
 lesion, in granuloma inguinale (Fig) 476
 pruritus diff diag (Table) 1916
 psoriasis of (Fig) 8417
- Anxiety definition 1300
 in neurasthenia 1340
 neurosis 1247
 diagnosis 1349
 in hypertension 905
 treatment 1349
- Aorta abdominal aneurysm of 993
 anatomy 3378
 aneurysm of causes (Table) 968
 (Fig) 798
 manifestations (Table) 968
 arch persistence of 960
 arteriosclerosis of 993
 coarctation of 959
 diff diag (Table) 868 910
 (Fig) 960
 manifestations (Table) 964
 dilatation of 993
 causes (Table) 968
 manifestations (Table) 968
 fluoroscopic examination of 708
 insufficiency blood pressure in (Table) 970
 diff diag (Table) 970 994
 electrocardiogram in (Table) 970
 prognosis (Table) 974
 lesions diff diag (Table) 994
 murmur description (Table) 973
 stenosis blood pressure in (Table) 971
 causes (Table) 971
 diff diag (Table) 994
 electrocardiogram in (Table) 971
 manifestations (Table) 971
 prognosis (Table) 974
 valvulitis syphilitic 1026
- Aortitis diff diag (Table) 802
 syphilitic 1025
 diff diag (Table) 994
- Apathy definition, 1301
- Apex impulse decreased diff diag (Table) 3528
 increased diff diag (Table) 3528
 murmur description (Table) 973
 sounds description 777
- Aphakia, definition, 1582
 after encephalomyelitis 453
- Aphonia in chronic laryngitis 2163
 definition 1310
 hysterical 2691
- Aphrodisiacs 2512
 list 3897
- Aphthae oral 1695
- Aphthous stomatitis 454
- Apocryphus 2040
- Aplasia, axialis extra-cortical congenita 1418
 diff diag (Table) 1533

- Artificial insemination, test for 2503
respiration 3766
- Ascariasis 1906
(Fig) 1906
santonin in, 1896
serologic test in (Table) 59
skin test in (Table) 59
- Ascaris lumbricoides 1906
morphology (Table) 3732
ova (Fig) 1894
size (Fig) 1906
in stool (Fig) 3731
- Aschheim Zondek test, 2496
positive in ovarian teratoma, 2578
- Aschoff body in heart (Fig) 168
- Ascites in backward failure 944
definition 11
diff diag (Table) 1921
differentiation from ovarian tumor 2576
- Ascoli treatment of malaria, epinephrine in, 3879
- Ascorbic acid, 627 See also Vitamin C
dosage (Table) 1049
in senile cataract, 1554
therapeutics 3325
in urticaria, dosage 3349
- Aseptic fever 23
- Asexual reproduction in bacteria, 139
- Asiatic cholera, 249
pills carcinogenic properties of 3 16
- Aspergilloma of auditory canal 498
pulmonary 498
(Fig) 2215
- Aspergillus identification, 487
- Aspermia 2401 2409
- Asphyxia, central, 2767
lida, 2768
neonatorum 2766
pallida, 2768
postoperative prevention, 4005
- Aspidium 1895
poisoning ophthalmic manifestations 1595
therapeutics (Table) 1898
- Aspiration biopsy technique 2804
chest diagnostic, 3344
diagnostic technique, 2030
of gastric contents 1 111
in hydrocele 2433
of joint procedure 2801
technique 3049
in neoplasms biopsy 575
pericardial technique 862
pneumonia, 2048
postoperative prevention, 4005
therapeutic 2031
treatment by list 3770
- Aspirin See Acetylsalicylic acid
- Association, clasp definition on 1297
- Atasia lassa definition 1303
diff diag (Table) 3496
- Atardoid bodies (Table) 1592
- Asthma in backward failure 945
congenital basal metabolism in, diff diag
(Table) 719
diff diag (Table) 2890
neurocirculatory 897
electrocardiographic changes in 808
(Fig) 813
gravitation shock in, 925
- Asthenopia, 1537
- Atimia, autohemotherapy in 81
bronchial, 2101
allergen in, 553
antispasmodics in, dosage, 2052
in bacterial atopy 559
cardiac contour in (Fig) 794
diff diag (Table) 404
electrocardiographic changes in 808
(Fig) 845
cardiac, in coronary artery syphilis, 1012
cigarettes 2019 3875
epinephrine in, 3879
thymic, 1235
- Asthenoid symptoms in bronchial adenoma,
2076
- Astigmatism, 1637
- Astringents 3112
creams evaluation 3139
for eyes, 1548
- Astrocytoma, 1419
- Atabrine in giardiasis dosage 321
in malaria 519
dosage 5 11
prevention, 5 0
pigmentation due to diff diag (Table) 3242
in typhoid fever 239
- Ataxia, cerebellar 1415
irregular gait in (Table) 4737
diff diag (Table) 3593
hereditary 1415
spinal Friedreich's 1413
locomotor 1464
- Atelectasis 2032
aneurysm, 1096
compression 20 3
congenital 2770
in lobes pneumonia, 2180
in newborn prevention, 2748
obstructive 2032
in pertussis 280 282
postoperative 4017
diff diag 4016
(Fig) 2034 4017
treatment (Table) 4016
tracheal in asphyxia neonatorum 2767
- Atelecton diff diag (Table) 2878
- Ath rosei ross mechanism, 9
- Athlete's foot, 3798
prophylactic treatment in 3309
sterilization of hooves in 3309
- Athletic heart, description, 869
- Athrepsia 2783
- Atlas dislocation 2269
treatment (Table) 2965
fractures, 3007
treatment (Table) 3004
- Atony gastric, definition 1769
- Atophan evaluation, 3633
- Atopic dermatitis, 3342
diff diag (Table) 173 3266 3382 3409
examinations in, 3344
of infancy diff diag (Table) 3146
skin in diff diag (Table) 3218
treatment, 3344
neurodermatitis (Fig) 3331
- Atopy bacterial, 552
contact 349
drug 549
pollen, 542

- Arsphenamine administration 116
 chemical structure, 116
 distribution 120
 dosage 117
 efficacy (Table) 124
 excretion 120
 silver administration 117
 dosage 118
 skin eruptions caused by 3339
 in *sodoku* 364
 in spirillar infections 3113
 toxicology 120
 trivalent toxicology 3393
 Arterial adequacy methods of examination 3381
 bed resistance of in hypertension 901
 circulation oscillometer in determination of 791
 occlusion 994
 treatment 998
 pressure gradient description 783
 in hypertension 904
 pulse 782
 tracings (Fig) 783
 tension mechanism 783
 valve function, 777
 Arteries (artery) anatomy 3376
 cerebral diagram (Fig) 1440
 coronary function, 773
 occlusion 983
 syphilis 1012
 function 782
 hardening of *See Arteriosclerosis*
 hyaloid persistence 1564
 mesenteric occlusion of 994
 obstruction of paravertebral nerve block for 833
 retinal obstruction 1587
 (Fig) 1588
 spinal occlusion 1449
 Arterioles lesions in hypertension 903
 Arteriosclerosis 976
 of aorta, 993
 calcification in, 10
 cerebral 1438
 diff diag (Table) 1437
 chemistry of 977
 clinical manifestations 979
 coronary aortic disease predisposing to 972
 diagnosis 979
 diff diag (Table) 868 910 994 996
 eye in, 908
 (Fig) 907
 generalized, 981
 of heart valves, 982
 kidney in (Fig) 902 903
 ophthalmic manifestations 1586
 pathogenesis 977
 pathology 977
 pernicious anemia and 1081
 predisposing factors in, 973
 pulmonary 994
 of spinal cord, 1448
 treatment, 979
 Arteriosclerotic endocarditis diff diag (Table) 1018
 peripheral vascular disease 994
 diff diag (Table) 996
 gait in, diff diag (Table) 3400
 psychoses, 1381
 arteriosclerotic ulcer 1763
 arteriovenous aneurysm 1433
 causes (Table) 969
 of cavernous sinus ophthalmic signs 1331
 exophthalmos in 1577
 fistula congenital, 968
 edema in 711
 Arteritis coronary 1013
 pulmonary 1027
 syphilitic coronary 1026
 temporal 1032
 Artery *See Arteries*
 Arthritis acute traumatic, 2060
 allergen in 553
 atrophic *See Arthritis rheumatoid*
 climacteric 2356
 deformans *See Osteo-arthritis*
 degenerative *See Osteo-arthritis*
 hypertrophic *See Osteo-arthritis*
 infectious 2905
 bacteriologic variants 2906
 cervical spine disturbances, diff diag (Table) 2518
 diff diag (Table) 2911
 (Fig) 2907
 joint pain in diff diag (Table) 2803
 lump in (Table) 2736
 pathology 2905
 roentgenographic characteristics 2907
 treatment 2909
 Marie-Strümpell 2915
 osteomyelitis and diff diag 2936
 of rheumatic fever 189
 rheumatoid 2910
 cervical spine disturbances in, diff diag (Table) 2918
 clinical variants 2915
 chrysotherapy evaluation 2922
 diff diag (Table) 192 2934
 differentiation from osteo-arthritis 2965
 joint mobility in diff diag (Table) 2911
 kyphosis in diff diag (Table) 3062
 lumbago in diff diag (Table) 3073
 stages (Fig) 2912
 swelling in diff diag (Table) 2953
 treatment 2918
 summary 2926
 x ray (Fig) 2914
 syphilitic, 2939
 Arthrodesis 2813
 indications for 3995
 in rheumatoid arthritis 2925
 Arthrogryposis multiplex congenita, 2834
 diff diag (Table) 2810
 (Fig) 2833
 Arthropathic psoriasis 3418
 Arthropathies allergic diff diag (Table) 2910
 2878
 coliform diff diag (Table) 2878
 psoriatic diff diag (Table) 2879
 Arthroplasty 2813
 indications for 3993
 Arthrosis hemophilic diff diag (Table) 2875
 Arthrotony 2813
 in cartilage dislocation 2961
 indications 3933
 in joint mice 2962
 Arthus-like reaction, 85
 Articular facets, fractures 3010
 Artificial lever treatment, 3780

- Azotemia, pericarditis in 1007
 symptoms 1008
 prerenal 2277
 symptoms 2278
 Azoturia in pancreatic insufficiency 1938
 1939
 Azul, 353
- Bancroft test for mental deterioration 1396
 Babes-Ernst granules 303
 Babinski reflex, 3584
 in azotemia 2279
 Bacillary dysentery 243
 diagnosis, 245
 diff diag (Table) 240
 of newborn, diff diag (Table) 2782
 prognosis 248
 streptomycin in 247
 treatment preventive 248
 serum 247
 infections 225
 chills in (Table) 32
 enteric 225
 penicillin in evaluation 111
 streptomycin in evaluation 111
 fever in (Table) 26
 sulfonamides in 92
 ocular manifestations 1603
 Bacillus aerogenes capsulatus acrotal gangrene
 due to 2460
 colony in 139
 anthracis infections 292
 penicillin in evaluation 111
 streptomycin in evaluation 111
 coli, differential characteristics (Table) 3735
 in didymitis due to 2461
 foetidis 3462
 granulosis conjunctivitis 1622
 Klebs-Loeffler 302
 leprae 278
 mallei 327
 mesentericus in intestinal tract, 140
 mucosus capsulatus 328
 colony in 139
 in lobar pneumonia, 2176
 in mastoiditis, 2147
 penicillin in evaluation 111
 streptomycin 111 328
 pyocyaneus 328
 subtilis in intestinal tract, 140
 streptomycin in evaluation 111
 tuberculosis in lobar pneumonia 2176
 typhosus epididymitis due to 2461
 B citracin, 115
 in pyoderma 3156
 Back, adolescent round, 2926
 braces 3070
 broken transportation in (Fig) 2969
 dermatoses, diff diag (Table) 3363
 in infancy examination, 2733
 pain, low diff diag (Table) 3072
 posture and 3057
 postoperative, prevention, 4005
 upper diff diag (Table) 2940
 uterine growths and 2522
 sprain acute low 3063
 in nupulation in (Fig) 2064-3068
 strapping in, 3068
 strain, chronic postural 3071
- Back swellings, diff diag (Table) 292
 syphilis of (Fig) 338
 Backward failure 941
 ascites in, diff diag (Table) 1921
 in beriberi heart, 1015
 clinical manifestations, 942
 congenital, 963
 contraction in, 947
 in coronary occlusion 935
 cylindruria in, 944
 edema in, 711 742
 diff diag (Table) 717
 fever in 943
 diff diag (Table) 1007
 postoperative treatment, 4018
 symptomatic therapy 948
 treatment, 945
 Bacteremia, colon bacillus, treatment 249
 definition 43
 from E. coli 249
 in erysipelas 169
 influenza 287
 Bacteria causing disease 39
 cell membrane of 137
 chemistry 161
 colony 139
 culture 140
 form 137
 growth in, 139
 carbon dioxide for 140
 media for 140
 oxygen for 140
 variability in 141
 metabolism 142
 morphology 137
 reproduction 138
 size, 137
 staining 138
 in urine, 3684
 virulence mechanism in, 141
 Bacterial allergy 55^a
 test for 560
 stopy 532
 cell morphology 137
 endocarditis acute 1070
 diff diag (Table) 1018
 congenital cardiac disease and, 965
 subacute 286 1021
 (Fig) 1022
 valvular defect predisposing to, 972
 flora 146
 infection general considerations 137
 products in active acquired immunity 77
 skin allergy 3332
 Bactericides local in eye disease (Table) 1543
 skin 3112
 w t dressing technique 3134
 Bacteriologic diagnosis 45 52
 Bacteriology of eye 1546
 of intestines 1821
 B.A.L., 767
 Balanoposthitis 2427 2454
 erosive 2456
 diff diag (Table) 3218 3244
 fungal, 2436
 Balantidians 1823
 diagnosis by smear (Table) 50
 Balantidium coli, 1823
 (Fig) 1822
 Baldness See Alopecia

- Atopy serum 548
 Atoxyl chemical structure of 120
 Atresia pulmonary 960
 Atrophy acute yellow 1968 *see also Jaundice*
 brown of heart 9
 (Fig) 8
 cerebral after asphyxia neonatorum 2768
 definition 7
 infantile 2783
 muscle diff diag (Table) 2882
 progressive 2884
 optic, 1644
 (Fig) 1422
 hereditary 1640
 in trypanamide therapy 125
 of skin, diff diag (Table) 3402
 subacute red, 1969
 Atropine 3875
 in complete heart block 880
 derivatives in obesity 698
 dosage (Table) 3875
 as mechoyl antidote 3876
 phenobarbital prescription 1775
 poisoning 3876
 ophthalmic manifestations 1695
 skin reactions due to 3339
 substitutes 3875
 sulfate in asthma dosage 2103
 in infancy dosage 2743
 in syncope 923 928
 Atropine like preparation prescription 2345
 Atropinum 3875
 treatment 3875
 Attendant in infectious diseases, 68
 Attention blunting 1296
 definition 1296
 fluctuation definition 1296
 Audiometry 2017 2611
 in infancy indications 2738
 Auditory canal examination, 3609
 external eczema, 2112
 furunculosis of 2111
 herpes zoster in 2112
 ringworm of 3305
 osteoma 2085
 stenosis 2013
 nerve paralysis 1485
 vertigo 1486 *See also Ménière's disease*
 Aura in epilepsy 1515
 in migraine 1507
 Aural discharge diff diag (Table) 2150
 Aural sulfide in rheumatoid arthritis 2922
 Auricle disturbances of 881
 left fluoroscopic examination, 796
 right fluoroscopic examination 797
 Auricular beats premature electrocardiographic diagnosis 810 848
 Fibrillation electrocardiogram in (Fig) 842
 843 845 846
 electrocardiographic diagnosis of 811
 paroxysmal 885
 diff diag (Table) 832
 quinidine in, 802
 permanent 885
 digitalis in, 830
 Fistula, 3148
 of infancy diff diag (Table) 3146
 Butter digitalis in, 853
 electrocardiogram in (Fig) 842
 electrocardiographic diagnosis of 810
 Auricular flutter paroxysmal 883
 electrocardiogram in (Fig) 841
 permanent 884
 digitalis in 884
 quinidine in 884
 septal defect, manifestations (Table) 964
 tachycardia 881
 vagal stimulation in 882
 Atriculoventricular block 879 *See also Heart block*
 nodal rhythm 878
 valve function 777
 Auscultation, 3337
 of abdomen 3567
 abnormalities of chest wall noted by diff diag 3540
 of heart technique 3548
 of lungs technique, 3537
 sounds pulmonary abnormal 3540
 normal 3539
 Auspitz sign in psoriasis 3416
 Austin Flint murmur in aortic insufficiency 974
 Australian X disease 445
 Autism definition 1296
 Autohemotherapy 81
 in atopic dermatitis 3345
 in dermatitis herpetiformis 3372
 in urticaria 3349
 Auto-intoxication 1821
 Automatism definition 1908
 Autonomic arrhythmia 874
 imbalance 14 139a
 asthenia and 897
 circulatory disturbances in (Table) 955
 in hypertension 900 905
 hyperthyroidism and 1200
 in neuroses 1342
 rheumatoid arthritis and 2911
 Autopsychotherapy 1320
 A valve *See Atriculoventricular valves*
 Avertin, evaluation (Table) 3837
 pre-anesthetic 3913
 sedation in tetanus 299
 Aviation blackout 906
 Avitaminoses 615 *See also Vitamin A deficiency etc*
 circulatory disturbances in (Table) 955
 clinical manifestations 616
 diff diag (Table) 3266
 gravitation shock in 903
 postoperative treatment 4007
 Avulsion (Fig) 3267
 treatment, 3266
 Axilla dermatoses of diff diag (Table) 3035
 ringworm of 3305
 Axillary lymph nodes palpation 3525
 Lymphadenopathy diff diag (Table) 3526
 sweat gland abscesses 3253
 diff diag (Table) 3253
 (Fig) 3247
 vein thrombosis 711
 Axis dislocation treatment (Table) 2265
 fractures 3007
 treatment (Table) 3004
 Ayer's disease *See Polycythemia*
 Azochloramide in wounds 3117
 Azospermia 2401 2408
 Azotemia 737 2278
 blood studies in, 2280
 diff diag (Table) 2276

- Behavior motor L.08
 sexual, definition, 1303
 Bejel cativi, 333 See also *Pin.a.*
 Belching 1769
 Belladonna, 3375
 fever due to, 44
 jag, 3375
 in obesity 693
 pharmacology, 3375
 plaster evaluation, 3114
 tincture of, in infancy dosage, 2743
 in tuberculosis, 271
 Bell's palsy 1434
 Benadryl, 56.
 Bence-Jones proteinuria, diff diag (Table)
 3673
 in multiple mye oma, 1127
 test, 3673
 Benedict's solution, disturbances producing re-
 duction of diff. diag (Table) 3676
 test, 3674
 interpretation, 3674
 Benign neoplasms, 569 See also *Tumors*
 Bennett's fracture, 3035
 treatment (Table) 3016
 Benzodrine 3384 See also *Amphetamines*
 in fatigue 2339
 sulfate in infancy dosage, 2744
 in obesity 693
 toxicity 3387
 Benzidine test, 3635
 Benz ne as clean ing agent, 3114
 poisoning, clinical manifestations (Table)
 46
 diagnosis (Table) 746
 occupations susceptible to (Table) 746
 treatment (Table) 746
 Benzocaine in ulcers, prescription, 3114
 Benzoe acid as fungicide, 3114
 ointment, 3307
 Benzoin, uses 3114
 Benzoinated lard, use of 3114
 Benzol poisoning, clinical manifestations
 (Table) 746
 diagnosis (Table) 746
 occupations susceptible to (Table) 746
 treatment (Table) 746
 Benzyl benzoate as parasiticide prescription,
 3115
 Beriberi, 622
 edema in, diff diag (Table) 717
 heart, 1014
 wet, 623
 (Fig) 618
 Berlock dermatitis, 3177
 Berner Boeck-Schaumann's disease. See *Sar-
 coidosis*
 Bermuda grass, geographic distribution (Fig)
 560
 Bernheim's syndrome, 712
 Bernreuter test, personality inventory 1925
 Beta-hemolytic streptococci electrocardiogram
 in (Fig) 8-8
 in puerperal sepsis, 2603
 structure, 158
 Betanaphthol in hookworm infestation, 1897
 as keratolytic, prescription, 3115
 therapeutics (Table) 1893
 Bezold symptom triad, 2025
 Bibliotherapy in tuberculosis, 271
 Biermer's anemia. See *Pernicious anemia.*
 Bigeminal rhythm, 887
 Bile, cholesterol in, 1985
 composition, 1935
 cyst, 1925
 (Fig) 1924
 definition, 1935
 ducts. See *Biliary ducts*
 in duodenal contents, 3727
 pigments in stool, test for 3729
 preparations, 1327
 salts, dosage, 1920
 (Table) 1043
 in toxic hepatitis, 1963
 in urine, tests for 3656
 Bilharziasis, 537 See also *Schistosom and
 of bladder* 2341
 vesical (Fig) 2347
 Biliary antiseptics, 1920
 carcinoma, 1972
 (Fig) 1974
 colic, 2000
 constituents in body fluids (Table) 1935
 drainage, 3726
 interpretation (Table) 3727
 technic, 1752
 ducts, anatomy 3-3
 atresia, 1994
 diff diag (Table) 2761
 benign tumors 1996
 carcinoma, 1996
 clinical disturbances, list, 1993
 examination, special, 1987
 function, 1936
 parasitic disease, 2010
 physiology 1934
 structure 1992
 dyskinesia, 2007
 jaundice in diff diag. (Table) 19-4
 fistula, external, 1992
 infections, hepatitis complicating, 1965
 obstruction, posthepatic jaundice and, 2006
 postoperative, 1993
 tract disturbances, 1993
 abdominal rigidity in, diff diag (Table)
 1746
 phosphatase activity in, diff diag.
 (Table) 723
 surgery indications for 1990
 postoperative treatment, 1991
 preoperative care 1990
 treatment, 1989
 tumors 1996
 diff diag (Table) 1957
 Biliousness, 1956
 definition, 1 63
 Bilirubin concentration, determination, 1247
 excretion test, 1948
 in serum (Table) 5
 Bilirubinemia, 19-1
 Bimanual abdominovaginal examination, tech-
 nic, 3643
 Binocular magnifier (Fig) 3623
 vision, mechanism 1577
 Biogeography epidemiology and, 44
 Biopsy aspiration, technic, 2804
 in dermatoses, 3109
 in infancy indications, 2749
 of lymph node, 3235
 in neoplasms, 275

- Balneotherapy 3763
 Balsam of Peru in scabies prescription 3114
 Bamboo spine 2016
 Banana diet in hyperchromic anemias 1065
 powder in celiac disease 1938
 Bandages compression in shock prevention 938
 elastic, after plaster removal 3001
 four tailed for fractured jaw (Fig.) 2066
 plaster of paris in elbow or forearm fracture (Fig.) 2099
 use 2093
 Bang's disease 314 See also *Brucellosis*
 Bant's syndrome 1151 1976 See also *Splenic anemia*
 Barber's itch See *Tinea barbae*
 Barbitol dosage (Table) 3836 3837
 Barbiturates 3839
 chemical relationship 3839
 dosage (Table) 3836
 habituations, 3843
 in hypertensive encephalopathy 916
 idiosyncrasy 3842
 in obstetrics dosage 2679
 poisoning acute 3842
 chronic, 3843
 treatment 3842
 preparations 3836
 skin eruptions due to 3839
 therapeutics (Table) 3841
 toxicology 3842
 Barium chloride in complete heart block 880
 effect on cardiac muscle 3888
 nema 1824
 in infancy indications 2737
 in intussusception 1877
 in torsion of bowel, 1876
 injections in complete heart block 880
 meal in contrast roentgenography 3742
 in infancy indications, 2737
 sulfate in infancy dosage for roentgenography 2745
 Barlow's disease See *Scurvy*
 Bartholin ducts anatomy 3644
 glands cysts 2549
 Bartholinitis, 2587
 Bartonella bacilliformis 384
 (Fig.) 385
 Bartonellosis 384
 Basal anesthesia 3913
 barbiturates in (Table) 3941
 in obstetrics 2678
 metabolic rate decreased in chronic glom-
 erulonephritis 2392
 diff diag (Table) 719
 in myxedema, 1185
 in Plummer Vinson syndrome 1728
 in Simmonds' disease 1172
 determination 3738
 errors 3739
 technic 3739
 in reased, in backward failure 943
 diff diag (Table) 720
 in hyperthyroidism 1206
 interpretation 716
 pulse rate and 3486
 thyroid extract and 1189
 metabolism, definition, 685
 determination 3738
 sound description 777
 temperature changes in pregnancy 2623
 Basal cell epithelioma 3220
 (Fig.) 3220
 Baseball finger 2060
 Basedow's disease See *Hyperthyroidism*
 Basophil adenoma 1160
 Basophilia diff diag (Table) 1003
 Basophilism pituitary 1159
 circulatory disturbances in (Table) 931
 diff diag (Table) 695 910
 Basophils 3702
 Bath asidrotic, 3133
 antipruritic 3133
 antiseptic, 3133
 astringent, tannic acid in 3129
 carbonated (Table) 3791
 colloid (Table) 3791
 technic, 3133
 continuous (Table) 3791
 contraindications to 3134
 counterirritant technic 3133
 deodorant 3132 3133
 healing 3134
 keratolytic 3133
 macerating 3133
 medicated (Table) 3791
 moist (Table) 3791
 paraffin (Table) 3791
 partial indications 3134
 physiotherapy by (Table) 3791
 pruritus diff diag (Table) 3170
 rube-facient 3133
 Russian (Table) 3791
 salts chemistry 3144
 shock (Table) 3791
 sulfur 3134
 sweat in common cold 305
 as therapeutic agent 3132
 tub 3133
 Turkish (Table) 3791
 types of 3761
 Vlemmick's solution, technic 3134
 warm in peripheral vascular disease 907
 in pertussis 284
 Bauer's low calcium diet 1949
 Bazin's disease See *Erythema induratum*
 BCG vaccine 266
 B'sal's conjunctivitis 1623
 Beard dermatoses of diff diag (Table) 3437
 ringworm of (Fig.) 3303
 Beats missed 387
 Bed, hospital advantages 69
 in backward failure 943
 pan use of in infectious diseases, 70
 rest in back sprain, 3069
 in rheumatic fever 196
 in tuberculosis 267
 wetting See *Enuresis*
 Bedbug bites 3187
 diff diag (Table) 3360
 (Fig.) 3183
 Bednar stomatitis 1690
 Bedsores 3187
 postoperative prevention 4003
 prevention 3167
 treatment 3167 3369
 Bees bites 3197
 shock due to 906
 Beetle brow with prognathus diff diag (Table) 3506
 Behavior disorders 1359

- Behavior motor 1303
 sexual, definition, 1-03
 Bevel cavi, 333 See also *Pinto*.
 Belching, 1-63
 Belladonna, 3373
 fever due to, 24
 jag, 3375
 in obesity 629
 pharmacology 3373
 plaster evaluation, 3114
 tincture of, in infancy dosage, 2-43
 in tuberculosis, 271
 Bell's palsy 1484
 Benadryl, 263
 Bence-Jones proteinuria, diff diag. (Table)
 26-3
 in multiple myeloma, 1127
 test, 2-673
 Benedict's solution, disturbances producing re-
 duction of diff diag (Table) 36-6
 test, 36-4
 interpretation, 3-4
 Benign neoplasms, 563 See also *Tumors*
 Bennett's fracture, 3033
 treatment (Table) 3016
 Benzene 333 See also *Amylatemans*
 vs fatigue 23-2
 sulfate in infancy dosage, 2-44
 in obesity 629
 toxicity 333-3
 Benzidine test, 3633
 Benzene as cleaning agent, 3114
 poisoning, clinical manifestations (Table)
 48
 diagnosis (Table) 745
 occupations susceptible to (Table) 74-
 treatment (Table) 745
 Benzocaine in ulcers, prescription, 3114
 Benzene acid as fungicide, 3114
 ointment, 3307
 Benzoin, uses 3114
 Benzoinated lard, use of 3114
 Benzol poisoning clinical manifestations
 (Table) 746
 diagnosis (Table) 746
 occupations susceptible to (Table) 74-
 treatment (Table) 745
 Benzyl benzoate as parasiticide, prescription,
 3113
 Beriberi, 62-
 edema in, diff diag. (Table) 717
 heart, 1014
 wet, 623
 (Fig) 618
 Berlock dermatitis, 31-7
 Besnier Boeck-Schaumann's disease. See *Sar-
 coidosis*
 Bermuda grass, geographic distribution (Fig)
 560
 Bernheim's syndrome, 712
 Bernreuter test, personality inventory 1-1-
 Beta-hemolytic streptococci, electrocardiogram
 in (Fig) 823
 in puerperal sepsis, 2603
 structure, 1-8
 Betanaphthol in hookworm infestation, 15-7
 as keratolytic, prescription, 311-
 therapeutics (Table) 1523
 Bezold symptom triad, 2025
 Bibliotherapy in tuberculosis, 271
 Biermer's anemia. See *Pernicious anemia*.
 Big-minal rhythm, 637
 Bile, cholesterol in, 1935
 composition, 1935
 cyst, 1925
 (Fig) 1924
 definition, 1935
 ducts. See *Biliary ducts*
 in duodenal contents, 5-27
 pigments in stool, test for 5-29
 preparations, 192-
 salts, dosage, 1920
 (Table) 1043
 in toxic hepatitis, 1963
 in urine, tests for 5-56
 Biliarrhysis, 537 See also *Schistosomiasis*
 of bladder 2341
 vesical (Fig) 234
 Biliary antiseptics, 1920
 carcinoma, 19-2
 (Fig) 19-4
 colic, 2000
 constituents in body fluids (Table) 1933
 drainage, 5-26
 interpretation (Table) 5-27
 technique, 1-2
 ducts, anatomy 3-53
 atresia, 1924
 diff diag (Table) 2-61
 benign tumors, 1924
 carcinoma, 1924
 clinical disturbances, list, 1923
 examination, special, 1927
 function, 19-6
 paratyphoid disease 2010
 physiology 1924
 structure, 192-
 dyskinesia, 2007
 jaundice in, diff diag. (Table) 19-4
 fistula, external, 1924
 infections, hepatitis complicating, 1925
 obstruction, posthepatic jaundice and, 2006
 postoperative, 1-2-
 tract disturbances, 1923
 abdominal rigidity in, diff diag (Table)
 174-
 phosphatase activity in, diff diag.
 (Table) 2-23
 surgery indications for, 1920
 postoperative treatment, 1921
 preoperative care 1920
 treatment, 1923
 tumors, 1-2-
 diff diag (Table) 1937
 Biliousness, 19-2
 definition, 1-63
 Bilirubin concentration, determination, 1947
 excretion test, 1943
 in serum (Table) 5
 P-irubinuria, 19-1
 Esmann abdominalovaginal examination, tech-
 nique, 1-63
 Binocular magnifier (Fig) 3623
 vision, mechanism, 1547
 Biogeography epidemiology and, 44
 biopsy aspiration, technique, 2-04
 in dermatoses 3109
 in infancy indications 2-40
 of lymph nodes, 2-25
 in neoplasms, 67-

- Biopsy skin technic 3935
 in tuberculosis 264
 Biot breathing 2016
 Biotin 629
 deficiency cutaneous manifestations 3238
 Bird face diff diag (Table) 3506
 (Fig) 1688
 Birth certificate of newborn 2749
 pabies 1433 2351
 deformity in diff diag (Table) 2954
 (Fig) 2952
 trauma 2771
 Bisferous pulse diff diag (Table) 3581
 Bismarsen 118
 absorption 120
 administration 118
 dosage 118
 efficacy (Table) 124
 in lupus erythematosus dosage 3399
 Bismocymol, dosage (Table) 128
 Bismosol dosage (Table) 128
 Bismuth 126
 in arsenotherapy 126
 arsphenamine sulfonate See *Dismarsen*
 deposit in gingivae (Fig) 1675
 in coronary artery syphilis 1012
 intramuscular injection of technic, 3772
 in lichen planus dosage 3393
 in lupus erythematosus dosage 3397
 poisoning 127
 oral manifestations 1677
 preparations in syphilotherapy 128 345
 skin eruptions due to 3339
 sodium tartrate dosage (Table) 128
 subgallate in skin disturbances 3115
 subnitrate in skin disturbances 3115
 tribromphenate in skin disturbances 3115
 Bites animal, 3180
 bedbug 3187
 cat treatment 3969
 chigger 3190
 diff diag (Table) 3250 3346 3378
 dog treatment 3969
 flea 3189
 human 3108
 treatment 3970
 leech 3196
 rat treatment 3969
 sand flea 3190
 snake 3196
 treatment, 3197 3970
 spider 3196
 tick, 3191
 Bitlers 1756
 Black death 322
 eye diff diag (Table) 1612
 Blackout in aviation 926
 Blackwater fever 514 1076
 diff diag (Table) 1074
 treatment 523
 Bladder anatomy 2245
 atonic 2331
 autonomic, 2331
 carcinoma 2323
 cystoscopic view (Fig) 2324
 catheterization of See *Catheterization*
 cord 2331
 cystometry in 2248
 disturbances in pelvic fractures 3011
 diverticula (Table) 2286
 double (Table) 2286
 dysfunction neurogenic, 2331
 treatment 2333
 types 2331
 echinococcus cyst, 2351
 ectrophy (Table) 2287
 extroversion 2303
 foreign bodies in, 2304
 herniation 2303
 injuries to 2301
 innervation 2245
 (Fig) 2233
 irrigation 2255
 solutions for 2345
 leukoplakia pathology 2345
 male, anatomy 2335
 (Fig) 2397
 papilloma, benign, pathology 2322
 cystoscopic view (Fig) 2324
 paralytic 2331
 paralyzed treatment, 1457
 rupture extraperitoneal 2303
 intraperitoneal 2303
 in pelvic fracture 3011
 schistosomiasis 2341
 tubercle (Fig) 2332
 tuberculosis 2349
 cystoscopic view (Fig) 2324
 tumors 2322
 (Fig) 671
 treatment 2323
 types 2322
 in urinary obstruction alterations in 2269
 Blanching tests in scarlet fever 179
 Blastomycosis 493
 (Fig) 496
 identification 487
 Blastomycosis 493
 clinical manifestations 493
 cutaneous lesions 493 3310
 European 497 See also *Toruloma*
 rodides in 495
 of leg (Fig) 3311
 of lungs (Fig) 2211
 serologic test for (Table) 69
 skin test (Table) 59
 of spine (Fig) 494
 Blastospore definition, 485
 Bleaches hair chemicals in 3141
 skin, chemicals used as 3139
 Bleaching creams evaluation, 3139
 Bleeding See also *Hemorrhage*
 control of in wounds 3959
 diatheses 1108
 from ear diff diag (Table) 2150
 menstrual progesterone in 2319
 prolonged diff diag (Table) 2537
 from nose diff diag (Table) 2123
 in placenta praevia, 2063
 postmenopausal 2527
 postoperative treatment, 4007
 postpartum 2718
 prepubertal diff diag (Table) 2179
 time 3/06
 normal (Table) 1018
 uterine electrocardiographic changes in, 30
 vaginal diff diag (Table) 2583
 in pregnancy diff diag (Table) 2061
 Blepharitis inclusion, 1623
 Blepharitis chronic (Fig) 1610

- Blepharitis complicating acne rosacea, 3357**
 marginalis 1609
 treatment staphylococcus toxoid in 1551
 tyrothricin in, 106
- III pharophumosis 1569**
- Blepharospasm diff diag (Table) 1612**
- Blind spots d ff diag (Table) 1645**
 physiological 1542
- Blinding filaria 3326**
- Blindness diff diag (Table) 1638**
 due to
 congestive glaucoma 1581
 methyl alcohol 1595
 obstruction of retinal artery 1587
 quinine, 1597
 vitreous hemorrhage 1639
 night diff diag (Table) 1635
- Blister friction, 3164**
- Blood 1035**
 agglutination See *Agglutination*
 bleeding time 3706
 capillary collection 3694
 cells damage to in sulfonamide therapy 95
 morphology 3699
 normal appearance 3699
 physiology 1038
 red See *Erythrocytes*
 stained morphology 3699
 in urine 3683
 white See *Leukocytes*
 cellular interchange and 5
 changes in plumbism, 763
 chemical constituents (Table) 5
 examinations 3712
 chemistry See *Blood studies*
 cholesterol decreased diff diag (Table) 736
 increased diff diag (Table) 736
 circulation hemorrhagic disease and 1110
 physiology 702
 citrated dosage (Table) 1049
 clot retraction 3706
 time normal (Table) 1046
 clotting calcium and 603
 mechanism 1109
 coagulation disturbances 1108
 time 3706
 normal (Table) 1046
- Iliac 53**
 for bacteriologic examination ■
 for serologic test 56
- color index ■ trial value (Table) 1046**
 technic 3705
- composition in menstruation 2485**
 count, 3696
 in hyperchromic anemia 1078
 in leukemia 1103
 normal variations in 1041
 in periarteritis nodosa 1029
 in polycythemia vera, 1093
 technic, 3696
 ■ tuberculosis milary 261
 ■ typhoid fever 234
- counts ■ chamb ■ (Figs) 3696 3697**
- cultures 53**
 in infancy and catons 2740
 for pneumococci technic, 202
 significant 55
 in tuberculosis milary 261
 in typhoid fever 233
- cytology 1035**
- Blood diseases 1035**
 abdominal pain in diff diag (Table) 1748
 albuminuria diff diag (Table) 2370
 anorexia in diff diag (Table) 1779
 anthesia in diff diag (Table) 2890
 diagnosis general methods 1045
 laboratory aids in (Table) 1046
 diarrhea in diff diag (Table) 1841
 drug therapy in (Table) 1048
 dyspepsia in diff diag (Table) 1771
 gums in diff diag (Table) 1701
 hematemesis in d ff diag (Table) 1764
 hematuria in diff diag (Table) 2306
 hemoptysis in diff diag (Table) 2058
 hepatomegaly in, diff diag (Table) 1973
 of infancy list 2739
 involuntary nervous system and (Table) 1396
 menorrhagia in diff diag (Table) 2537
 monocytosis in diff diag (Table) 1099
 nosebleed in diff diag (Table) 2123
 ophthalmic disorders in 1590
 manifestations 1590
 pain in, left lower quadrant diff diag (Table) 1867
 left upper quadrant diff diag (Table) 1940
 right lower quadrant diff diag (Table) 1881
 papilledema in, diff diag (Table) 1519
 pathogene ■ 1042
 pleural effusion in diff diag (Table) 2032
 prepuberal bleeding in diff diag (Table) 249
 pruritus ani in diff diag (Table) 1916
 roentgenotherapy in 1033
 somnolence in d ff diag (Table) 1908
 sore throat in diff diag (Table) 2071
 spinal cord disturbances in, diff diag (Table) 1433
 splenomegaly in diff diag (Table) 1129
 surgery in 1033
 tarry stools in diff diag (Table) 1845
 tests for 1046
 tongue in diff diag (Table) 1637
 treatment 1045
 vaginal bleeding in diff diag (Table) 2565
 vertigo in diff diag (Table) 200
- dyacrasias 1063**
 febril diff diag (Table) 192
 eosinophilia in diff diag (Table) 542
 oral ■ ■ stations diff diag 1677
 spleen in 1132
 examinations 3692
 extravasation ■ ■ ■ 3957
 in filariasis test for 3324
 flow coronary 774
 fragility test 3706
 grouping 3708
 errors in 3710
 isohemagglutinins, 32
 groups comparison (Table) 3709
 loss chronic, 1059
 d ff diag (Table) 1058
 nitrogen nonprotein, increase in 737
 occult, in feces detection, 3728
 test for 1744
 paras tes, 507
 peripheral, effect of digitalis on 857

- Blood phosphatase decreased diff diag (Table) 728
 increased diff diag (Table) 728
 physiology normal and pathologic 1035
 plasma chemical composition of (Table) 5
 dosage (Table) 1049
 volume normal (Table) 1016
 platelets in blood clotting 1109
 count technic 3692
 cytology 1040 3704
 disturbances 1114
 normal value (Table) 1016
 pressure anomalies diff diag (Table) 918
 See also *Hypertension Hypotension*
 in coronary occlusion 985
 decreased diastolic diff diag (Table) 918
 determinations 3486
 disturbances in congenital heart disease 903
 fall in caudal anesthesia 2691
 high 900 See also *Hypertension*
 diff diag (Table) 910
 in Cushing's syndrome 1162
 in hypertension 904
 increased in backward failure 945
 diastolic diff diag (Table) 918
 due to pituitary 1179
 in polycystic kidney disease 2292
 low 916 See also *Hypotension*
 diff diag (Table) 917
 measurement 783
 normal, variations in 3487
 in rheumatic myocarditis 1014
 in shock, 931
 venous determination technic, 788
 (Fig) 789
 sedimentation rate, 3707
 in coronary occlusion 984
 Luzenmeier method 3707
 normal values 3693
 Westergren method 3707
 serum See *Serum*
 smear, normal value (Table) 1046
 specimen collection, 3693
 spitting See *Hemoptysis*
 in stool diff diag (Table) 1843
 test for 3729
 studies in Addison's disease 1275
 in bacterial endocarditis 1023
 in diabetes mellitus 1250
 in glomerulonephritis, 2377
 in hyperparathyroidism 1229
 in hyperthyroidism 1206
 in infancy indications 2740
 in lobar pneumonia 2175
 in myxedema 1195
 in pregnancy 2627
 in shock 932
 in tuberculous pneumonitis 2205
 sugar curves after insulin (Fig) 1239
 determinations, 3714
 in diabetes 1250
 disturbances See *Hyperglycemia and Hypoglycemia*
 fasting low in hyperinsulinism 1244
 high in Cushing's syndrome 1162
 sulfonamide concentration in, test for 3717
 conversion factor (Table) 3718
 transfusion, 1055
 cross matching in, 3711
 direct, technic (Fig) 3780
 fever after 25
 incompatible blood in, reaction, 1074
 indirect 3778
 in lupus erythematosus acute 3401
 in pernicious anemia, 1087
 in purpura hemorrhagica 3426
 reactions 1074 3779
 in shock prevention, 938
 syphilis 332
 types 3708
 typing 3709
 cross matching 2454
 methods, 3710
 uric acid elevation, in gout 2874
 vascular system, anatomy 3343
 velocity 781
 venous collection 3694
 pressure, 784
 vessels anatomy 3576
 disturbances in peripheral vascular disease (Table) 908
 in female (Fig) 3577
 volume 5
 normal (Table) 1047
 vomiting See *Hematemesis*
 Blue grass geographic distribution (Fig) 550
 methylene in leprosy 277
 nevus 3205
 ointment as parasiticide 3121
 trypan in leprosy 277
 Blumer's shelf in stomach carcinoma 1816
 Boas tube 1750
 in gastric contents 3726
 (Fig) 3723
 Bockhart's impetigo See *Folliculitis pustular*
 Body care in infectious diseases 71
 fluids 5
 alterations in 10
 disturbances 702
 sulfonamide concentration in 101
 injury types of 15
 macular syphilid of (Fig) 338
 mechanics abnormalities 3492
 muscles (Fig) 3575
 response types of 15
 temperature 3484
 measurement 3484
 physiology 20
 in shock 932
 skin function in 3100
 tissues reaction of 3
 types 3488
 asthenic, 3489
 normal 3492
 ptotic, 3490
 pyknic, 3491
 slender 3488
 stocky 3491
 visceroplotic 3488
 water distribution, 686
 weight disturbances gain, diff diag (Table) 695
 loss diff diag (Table) 700
 Boeck's disease See *Sarcoidosis*
 Böhler's splint in clavicle fractures 3017
 in sternoclavicular dislocation, 2974
 Boil, 3248 See also *Furuncle*
 phenol for 3133

- Bone, aseptic, necrosis 2501
 atrophy 2801
 cyst, diff diag (Table) 2836
 (Fig) 2838
 swelling in, diff diag (Table) 2955
 decalcification, 2801
 diff diag., 2905
 (Table) 2806
 diagnostic roentgenology 3741
 disorders febrile diff diag (Table) 192
 formation in infancy (Fig) 2,97
 fragility (Fig) 2877
 granuloma, eosinophilia in, diff diag (Table)
 512
 growth embryology 2795
 histology 2795
 hypertrophy 2800
 infections 2894
 marble (Fig) 2880
 marrow in agranulocytosis 1100
 in anemia 1056
 in arphenamine therapy 123
 cytology 1035
 damage to in sulfonamide therapy 95
 disturbances 1091 1126
 hemorrhagic disease and, 1110
 in leukemia, 1103
 malignant tumor of 1126
 megakaryocytes in indications for splen
 ectomy 1116
 normal, cell count in (Table) 1043
 pathologic cell count in (Table) 1043
 streaks, 1043
 red, 1035 1042
 yellow 1035
 concentrate in agranulocytosis 1100
 metabol in disturbances 2850
 predispo ng to fracture 298°
 pain in, diff diag (Table) 2841
 parietal, frontal section (Fig) 3508
 pathology 2900
 physiology 2797
 pyogenic infection, diff diag (Table) 2934
 radiography in infancy indications 2,37
 swellings diff diag (Table) 2844
 syphilis See *Syphilis et arthritis*
 tumors 2835
 benign, 2835
 diff diag (Table) 2836 2934
 malignant 2843
 metastatic 2848
 osteomyelitis and, diff diag 2936
 pain in, diff diag (Table) 2870
 in upper extremities in, diff diag
 (Table) 2929
 pathologic fractures in, diff diag (Table)
 2946
 roentgenologic findings 2836
 Bone block 2813
 Bony pelvis anatomy 3569
 clinical examination, 357°
 male (Fig) 3571
 Boophil annulatus, 3192
 Boric acid as antiseptic 3115
 Bornholm disease 403
 Borrelia berbera, 357
 carter 357
 duttoni, 357
 infections 355
 novy, 357
 Borrelia recurrentis 357
 (Fig) 358
 refringens (Fig) 46
 taxonomic key to 329
 Botulinum toxin, 312
 Botulism 311
 animal inoculation in (Table) 62
 antitoxin, 313
 evaluation 83
 clinical manifestations 312
 culture (Table) 24
 diagnosis 312
 diff diag (Table) 240
 penicillin in, 313
 prognosis in, 313
 sulfonamides in, 313
 treatment, 313
 virulence mechanism of 145
 Bougies, types, 2205
 Boussarole 353
 Boutonneuse fever 383
 Bovine tuberculosis epidemiology 233
 Bowel bacteriology 1821
 care of in coronary occlusion, 290
 in infectious diseases, 72
 in tuberculosis, 270
 decompression of in paralytic ileus 4010
 large surg ry 1833
 preoperative care 1834
 resection See *Colectomy*
 small examination, 1822
 function, 1820
 resection 18,3
 surgery 1831
 preoperative and postoperative care,
 1833
 treatment 1823
 torsion 1875
 (Fig) 1876
 Bowen's disease 3,25
 diff diag (Table) 3210 3214 3368 3378
 (Fig) 3221
 Bowlegs in rickets 2852
 (Fig) 2363
 Boxer's fracture 2983
 Boys weight height-age table 3180 3181
 Braces in back pain, 3070
 (Fig) 30 0
 Brachial neuritis, 2953
 plexus injuries in infancy 2776
 Bracht-Wächter lesions in bacterial endocar
 ditis 1021
 Bradycardia, diff diag (Table) 877
 in digitalis intoxication 861
 in intestinal neuroses 1847
 in Simmonds disease 1172
 in typhoid fever 230
 Bradypnea diff diag (Table) 9014
 Brain abscess 1468
 in amebiasis, 526
 otogenic 2148
 rhinogenic, 2129
 compression 1452
 concussion 1451
 disturbances diff diag (Table) 1425
 frontal section (Fig) 2023
 function 1288
 infections diag (Table) 1463
 manifestations, 1463
 injuries, 1451

- Brain sand 1420
tumors 1419
 cerebral hemorrhage and differentiation, 1441
 diagnosis 1420
 electrocardiographic changes in 808 837
 (Fig) 1421 1425
 hypertension vs 309
 inciden - (Table) 1420
 localization 1423
 reaction patterns in 1423
 torulosis vs. 403
 ventricles anatomy 1280
 wet 1433
- Brain in diet 1825
- Braxton Hicks sign in pregnancy 2620
- Brush water definition 1771
- Bread food value 644
- Break bone fever See *Dengue fever*
- Breast abscess incision 3073
 (Fig) 3078
 treatment 3078
- adenofibroma (Fig) 576
- carcinoma, 2581
 androgen in 2520
 electrocardiogram in (Fig) 829
- congenital abnormalities 2533
 diff diag (Table) 2578
- cysts diff diag (Table) 2579
- disturbances diff diag (Table) 2578
- feeding 2749
 complications 2751
- funnel (Table) 2043
- inflammations diff diag (Table) 2578
- injuries 2546
- inspection 3323
- lactating dissection (Fig) 3324
- male disturbances 2473
- Padgett's disease of 3223
- pain in diff diag (Table) 892 2080
- palpation 3523
- in pregnancy 3023
- psoriasis under (Fig) 3417
- radiodermatitis of (Fig) 3160
- relation to chest wall (Fig) 3524
- sarcoma 2583
- syphilis 2613
- transillumination 3632
- traumatic fat necrosis 2546
- tumors benign 2579
 encapsulated 2579
 non-encapsulated 2580
 diff diag (Table) 2579
 malignant 2541
- Breath foul in azotemia 2379
- odor in diabetes mellitus 1251
 diff diag (Table) 1660
- sounds in backward failure 943
- Breathing amphoric 3-40
- bronchial 3540
- bronchovesicular 3540
- cavernous 3540
- disturbances diff diag (Table) 2014 2016
- exercise in rheumatoid arthritis 4920
- types of in auscultation 3539
- vesicular 3539
- Brenner tumor of ovary 2370
 (Fig) 2370
- Bright's disease 2379 See also *Olomerulonephritis chronic*
- Brill's disease, 371 See also *Typhus*
- Brilliant green in burns 3115
- Brilliantines chemicals in 3141
- Broadbent's sign in pericarditis 1011
- Brombenzyl cyanide 745
- Bromides 2838
 eruption in baby (Fig) 3800
 intoxication 1383
 ophthalmic manifestations 1596
 treatment, 3342
 skin reactions due to 3339
- Bromidrosis 3162
 treatment 3383
- Bromine poisoning clinical manifestations
 (Table) 747
 diagnosis (Table) 747
 occupations susceptible to (Table) 747
 treatment (Table) 747
- Bromism 3538
 treatment 3342 3338
- Bromsulfalein test 1943
 in infancy 2745
- Bronchi anatomy 2021 3330
 anomalies in stridor diff diag (Table) 2732
- carcinoma 2077 2078
- dilatation See *Bronchiectasis*
- foreign body in 2046
- stenosis 2043
- tumors (Fig) 2076
- webs of clinical manifestations (Table) 2043
- Bronchial adenoma 2075
- asthma 2101
 allergen in 333
 in bacterial atopy 552
 cardiac contour in (Fig) 794
 complications 2103
 diff diag (Table) 404
 electrocardiographic changes in 808
 (Fig) 835
 epinephrine in, dosage 2103
 nebulizers in 2028
 breathing 3540
 occlusion, 2075
- Bronchiectasis 2039
 complicating pertussis 282
 diff diag (Table) 404
 electrocardiographic changes in 808 822
 (Figs) 2060 2074 2196
 hippocratic fingers in (Fig) 2063
 right heart failure from 942
- Bronchiolitis fibrosa obliterans 2160
- Bronchitis chronic, 2168
 electrocardiogram in (Fig) 838
 diff diag (Table) 404
 fibrinous 2170
 purulent complicating influenza, 399
 ulceromembranous 2169
- Bronchography in bronchiectasis 2061
- Bronchopneumonia complicating epidemic
 pleurodynia 406
 complicating measles 414
 in paratuberculosis nodosa 1028
 pyogenic aspergilliosis vs., 498
 roentgen findings (Fig) 2191
 tuberculous acute 2189
- Bronchopulmonary pain diff diag (Table) 892
- Bronchoscope (Fig) 2026
- Bronchoscopy 2026
 diagnostic for tumors 2075
 in infancy indications for 2785

- Bronchocopy in lung abscess 2026
 Bronchospasm 2101
 diff diag 2106
 nitrites in 3891
 Bronchovesicular breathing 3540
 diff diag (Table) 3542
 Bronchus See *Bronchi*
 Bronze diabetes 1076
 pigmentation in, 9
 Broth food value of 650
 Brown atrophy of heart, 9
 (Fig) 8
 Brown Duerger cystoscope (Fig) 2248
 Brucella bacteriology of 314
 causing disease 39
 effect of sulfonamides on 314
 infections 314
 isolation of 317
 vaccine from evaluation 78
 Brucellergin Huddleson's 317 321
 skin test 317
 (Fig) 218
 Brucellosis 314
 acute clinical manifestations 314
 agglutination in, 317
 animal inoculation in (Table) 62
 clinical manifestations 314
 culture (Table) 51
 diagnosis 316
 diff diag (Table) 318 322
 fever in, diff diag (Table) 1006
 therapy 321
 joint pain in, diff diag (Table) 2802
 lymphadenopathy in, diff diag (Table) 1136
 meningitis diff diag (Table) 443
 ocular manifestations, 1003
 penicillin in 321
 pneumonitis 2192
 prognosis 319
 serologic test in (Table) 59
 skin test in (Table) 59 317
 (Fig) 318
 sulfonamides in 321
 temperature curve in, 35
 treatment 319
 Brudzinski sign 3572
 in meningitis 218
 Bryant traction in infants 3044
 Bubo chancroidal 2389
 (Fig) 2301
 inguinal diff diag (Table) 3092
 Bubonic plague 322
 Buccal mucosa exanthems involving diff diag
 (Table) 1668
 papilloma, 1714
 surface eruptions of diff diag (Table) 3285
 Bucket handle tear 2981
 Buerger's disease 1029 See also *Thrombo-angiitis obliterans*
 exercises 3987
 in peripheral vascular disease 998
 Buffalo gnat as vector (Table) 42
 head diff diag (Table) 3506
 obesity in Cushing's syndrome 1162
 (Fig) 1161
 Bulb vegetables food value of 645
 Bulbar palsy progressive 1504
 poliomyelitis 461
 Bulbo-spinal poliomyelitis 461
 Bulbo-urethral glands See *Cowper's glands*
 Bulimia definition, 1802 1768
 diff diag (Table) 1776
 in peptic ulcer 1781
 Bulk reaction 705
 Bulla(e) definition 3101 3104
 oral diff diag (Table) 1668
 in pemphigus vulgaris 3106
 Bulldog face diff diag (Table) 3506
 Bullus fever 383
 diff diag (Table) 383
 Bullous dermatoses diff diag (Table) 3334
 eruptions due to drugs 3338
 impetigo contagiosa, 3252
 diff diag (Table) 3334
 Bumper fracture 2983
 Bundle branch block 680
 left electrocardiographic diagnosis of 809
 right electrocardiographic diagnosis of 810
 Bunion 3088
 (hug) 3089
 infected 3977
 Buphthalmos definition 1560
 Burns brilliant green in 3115
 chemical of esophagus 1735
 edema in 715
 diff diag (Table) 717
 of eyes 1672
 first degree treatment 3981
 friction 3164
 hyperpotassemia in, diff diag (Table) 731
 oral treatment, 1639
 second degree, treatment 3981
 shock 932
 silver nitrate in 134
 tannic acid spray in 3129
 third degree treatment 3982
 treatment 3981
 Burrow definition 3104
 Bursitis Achilles 2904
 gluteal, 2903
 joint motility in diff diag (Table) 2811
 pain in, diff diag (Table) 2803
 needle puncture in (Fig) 2901
 olecranon diff diag (Table) 2955
 (Fig) 2902
 prepatellar 2903
 (Fig) 2903
 subacromial (Fig) 2901
 subdeltoid 2904
 (Fig) 2904
 Busse-Buschke disease 497 See also *Torulosis*
 Butcher's pemphigus 3407
 Butter 637
 composition (Table) 638
 substitutes 639
 food value 650
 Buttermilk 637
 composition (Table) 638
 Buttocks dermatoses of diff diag (Table) 3368
 Buttonhole dislocation 2977
 treatment (Table) 2971
 Butyn 3915
 Bwamba fever 408
 CABINET bath (Table) 3791
 Cachexia cardiac 945
 hypophyseal (Fig) 1171

- Brain sand 1420
tumors 1419
 cerebral hemorrhage and differentiation, 1441
 diagnosis 1429
 electrocardiographic changes in 808 837
 (Fig) 1421 1425
 hypertension vs 909
 incidence (Table) 1420
 localization 1423
 reaction patterns in 1423
 torulosis vs 498
 ventricles anatomy 1289
 wet 1438
- Bran in diet 1805
- Braxton Hicks sign in pregnancy 2620
- Brash water definition 1771
- Bread food value 644
- Break bone fever See *Dengue fever*
- Breast abscess incision 3978
 (Fig) 3978
 treatment 3978
- adenofibroma (Fig) 576
- carcinoma 2581
 androgen in 2520
 electrocardiogram in (Fig) 829
- congenital abnormalities 2533
 diff diag (Table) 2578
- cysts diff diag (Table) 2579
- disturbances diff diag (Table) 2578
- feeding 2749
 complications 2751
- funnel (Table) 2043
- inflammations diff diag (Table) 2578
- injuries 2546
- inspection 3523
- lactating dissection (Fig) 3524
- male disturbances 2473
- Padgett's disease of 3223
- pain in diff diag (Table) 892 2080
- palpation 2505
- in pregnancy 2625
- psoriasis under (Fig) 3417
- radiodermatitis of (Fig) 3160
- relation to chest wall (Fig) 3224
- sarcoma 2583
- syphilis 2615
- transillumination 2632
- traumatic fat necrosis 2546
- tumors benign 2519
 encapsulated 2579
 non-encapsulated 2580
 diff diag (Table) 2579
 malignant 2591
- Breath foul in azotemia 2279
- odor in diabetes mellitus 1251
 diff diag (Table) 1660
- sounds in backward failure, 943
- Breathing amphoric, 3540
- bronchial, 3540
- bronchovesicular 3540
- cavernous 3540
- disturbances diff diag (Table) 2014 2016
- exercise in rheumatoid arthritis 2900
- types of in auscultation 3539
- vesicular 3539
- Brenner tumor of ovary 2570
 (Fig) 2570
- Bright's disease 2379 See also *Glomerulonephritis chronic*
- Brill's disease, 371 See also *Typhus*
- Brilliant green in burns 3113
- Brilliantine chemicals in 3141
- Broadbent's sign in pericarditis 1011
- Brombenzyl cyanide 745
- Bromides 3838
 eruption in baby (Fig) 3809
 intoxication 1383
 ophthalmic manifestations 1596
 treatment 3342
 skin reactions due to 3339
- Bromidrosis 3452
 treatment 3483
- Bromine poisoning clinical manifestations
 (Table) 747
 diagnosis (Table) 747
 occupations susceptible to (Table) 747
 treatment (Table) 747
- Bromism 3833
 treatment 3340 3833
- Bromsulfalein test 1948
 in infancy 2745
- Bronchi anatomy 2024 3530
- anomalies in stridor diff diag (Table) 2732
- carcinoma 2077 2078
- dilatation See *Bronchiectasis*
- foreign body in 2048
- stenosis 2043
- tumors (Fig) 2076
- webs of clinical manifestations (Table) 2045
- Bronchial adenoma, 2075
- asthma 2101
 allergen in, 553
 in bacterial atopy 552
 cardiac contour in (Fig) 794
 complications 2103
 diff diag (Table) 404
 electrocardiographic changes in 808
 (Fig) 805
 epinephrine in, dosage 2103
 nebulizers in 2028
- breathing 3540
- occlusion 2075
- Bronchiectasis 2059
 complicating pertussis 282
 diff diag (Table) 404
 electrocardiographic changes in 808 831
 (Figs) 2060 2074 2196
 hypoconic fingers in (Fig) 2063
 right heart failure from 942
- Bronchiolitis fibrosa obliterans 2169
- Bronchitis chronic, 2168
 electrocardiogram in (Fig) 538
 diff diag (Table) 404
- fibrous 2170
- purulent complicating influenza 309
- ulceromembranous 2169
- Bronchography in bronchiectasis 2061
- Bronchopneumonia complicating epidemic
 pleurodynia 406
 complicating measles 414
 in pertussis nodosa 1028
 pyogenic aspergillosis vs, 498
 roentgen findings (Fig) 2191
 tuberculous acute 2189
- Bronchopulmonary pain diff diag (Table) 892
- Bronchoscope (Fig) 2046
- Bronchoscopy 2026
 diagnostic, for tumors 2075
 in infancy indications for 2735

- (amphor 3870
 in asphyxia neonatorum 2770
 effect on muscle 3483
 in skin diseases 3131
 therapeutics, 3870
 Campimeter 1542
 Canavalin (Table) 103
 Cancellous bone histology 2796
 Cancer See *Ca cinoma(s)*
 Cancerum oris 1697
 Candles food value of 653
 Candle jar in culture of bacteria 140
 Canities 3419
 Cannabis indica poisoning ophthalmic man-
 ifestations 1596
 Canning effect on food values 656
 Cannon's emergency theory 1963 1990
 Cantharides in alopecia prescription 3116
 Capillary blood collection, 3694
 Capillary normal value 3693
 test, 3708
 types, 1108
 function 784
 hemorrhages in scurvy (Fig) 628
 lake (Fig) 781
 permeability calcium and, 603
 disturbances 1119
 dye test for "13
 edema and, 712
 pulse diff diag (Table) 3381
 toxicosis hemorrhagic 1121
 Capsule bacterial chemistry of 138
 morphology of 137
 stain Hiss technic of 111
 Capsulotomy 2812
 Caput succedaneum cephalhematoma and 2 72
 diff diag (Table) 2774
 Carrickness 3876
 Carate See *Pinta*
 Carbamone 530
 in amebiasis dosage 530
 toxicity 530
 Carbohydrate absorption 589
 diet high in 678
 digestion 588
 fat metabolism and, 590
 fat ratio in normal diet 660
 in fatigue 2891
 in grain 642
 in high low fat diet 672
 in Addison's disease 1276
 in hepatitis 1987
 in Simmonds disease, 1174
 in infant feeding formula 2752
 low diet in hyp rinsulism 1245
 metabolism 587
 disturbances, 732
 in milk 634
 utilization 589
 Carbol-fuchsin office preparation of 49
 stain g with 52
 Carbon dioxide 3829
 administration 3430
 combining power of plasma (Table) 5
 heart muscle function and "76
 imbalance in hiccough 4009
 in pulmonary atelectasis 2053
 as keratolytic 3116 3138
 poisoning clinical manifestations (Table)
 747
 Carbon dioxide poisoning, diagnosis (Table)
 747
 occupations susceptible to (Table) 747
 treatment (Table) 747
 snow in acne vulgaris 3865
 in basal-cell epithelioma 3222
 use of 3785
 tension calcium metabolism and 2799
 therapeutics 3830
 disulfide poisoning clinical manifestations
 (Table) 747
 diagnosis (Table) 747
 occupations susceptible to (Table) 747
 treatment (Table) 747
 monoxide poisoning clinical manifestations
 (Table) 747
 diagnosis (Table) 747
 occupations susceptible to (Table) 747
 treatment (Table) 747
 tetrachloride 1537
 poisoning clinical manifestations (Table)
 753
 diagnosis (Table) 753
 occupations susceptible to (Table) 753
 treatment (Table) 753
 toxic hepatitis due to 1963
 Carbonated beverages food value of 656
 Carbuncle 3249
 diff diag (Table) 3369
 of face diff diag (Table) 3266
 of neck diff diag (Table) 3254
 of scalp diff diag (Table) 3254
 treatment 3272
 (Fig) 3271
 penicillin in (Fig) 3217
 Carcinogenic chemicals 3213
 effect of estrogens 2517
 Carcinogens 578
 Carcinoids 1891
 Carcinoma 572
 of ampulla of Vater 1996
 of bile ducts 1996
 of bladder 2322
 cystoscopy (Fig) 2321
 of bone 2443
 metastatic diff diag (Table) 2830
 of breast 2531
 electrocardiogram in (Fig) 829
 (Fig) 2531
 of bronchi 2077
 (Fig) 2076
 of cervix uteri 2551
 classification 2552
 epidermoid (Figs) 2552
 clinical manifestations 673
 of colon 1888
 (Fig) 1889
 committee League of Nations cancer of cer-
 vix classification by 2552
 complications 574
 diagnosis 574
 of epiglottis 2070
 of esophagus 1738
 (Fig) 1739
 etiology 572
 of eye (Table) 1566
 of eyelid border (Fig) 1 67
 of gallbladder 1993
 gastric, Boas-Oppler bacilli in (Fig) 3723
 contents in (Table) 3726

- Cachexia after inflammation 19
 pigmentation in diff diag (Table) 3242
 strumipriva 1193 1221
 treatment, 1217
 Cacosmia diff diag (Table) 2120
 Cadmium poisoning diagnosis (Table) 753
 diff diag (Table) 240
 occupations susceptible to (Table) 753
 treatment (Table) 753
 Café au lait tint of face diff diag (Table) 3506
 Caffeine as antidote evaluation 3867
 beverages 3868
 citrate dosage (Table) 3966
 dosage (Table) 3860
 effect on muscle 3888
 in fatigue 2889
 in hypertension, 913
 poisoning 3867
 ophthalmic manifestations 1596
 and sodium benzoate in infancy dosage 2744
 Caisson disease 1501
 Calabar swelling 3325
 Calamine liniment prescription 3115
 lotion prescription, 3116
 ointment 3116
 powder camphorated, prescription 3116
 shake lotion in dermatitis 3333
 solution prescription 3137
 and zinc lotion in dermatitis herpetiformis 3372
 Calciferol in lupus vulgaris 3765
 Calcification in arteriosclerosis 10
 in mercury poisoning 10
 Calcinosus, diff diag (Table) 3210
 generalized of skin 3211
 localized of skin 3211
 Calcium 601
 blood clotting and 603
 chloride dosage 604
 poisoning clinical manifestations (Table) 753
 diagnosis (Table) 753
 occupations susceptible to (Table) 753
 treatment (Table) 753
 cyanamide poisoning clinical manifestations (Table) 753
 diagnosis (Table) 753
 occupations susceptible to (Table) 753
 treatment (Table) 753
 deficiency diff diag (Table) 724
 in bone healing 2988
 deposition in injured tendon, 2959
 diet high in 678
 low in, 679
 dietary sources of 603
 effect on muscle 3898
 excretion stones 1997
 urinary in hyperparathyroidism, 1229
 gluconate dosage 604
 in urticaria 3349
 hydroxide uses of 3116
 inactivation of diff diag (Table) 724
 ionized in blood clotting 1109
 lactate use of 604
 mandelate in cystitis 2345
 metabolism 601 2797
 disturbances in 720
 factors affecting 2799
 parathyroids and, 2799
 pharmacology 603 3824
 Calcium phosphate 3824
 casts 3632
 requirement 601
 rigor 603
 heart function and 776
 salts insoluble use of 604
 in intestinal tuberculosis dosage 1863
 preparations 604 1755
 soluble use of 604
 in tetany 726
 in serum (Table) 5
 sources of 603
 therapeutics 604 3824
 in tuberculosis 269
 Calculus biliary 1997
 (Fig) 1998 1999
 dental 1699
 (Fig) 1699
 of pancreas 1944
 preputial 2427
 of prostate, 2436
 (Fig) 2437
 renal 2314
 chemical composition 2313
 colic in 2315
 cystoscopy in, 2317
 (Fig) 1228 2317
 urography in 2316
 in salivary glands 1711
 diff diag (Table) 2317
 (Fig) 1711
 of seminal vesicles 2436
 of tonsils 2159
 ureteral 2314
 urethral 2319
 urinary 2311
 chemical dissolution 2320
 composition 2312
 diet and 2311
 etiology 2311
 (Figs) 2312 2313
 gross appearance 2313
 manipulation in 2321
 operative therapy 2321
 prevention 2319
 renal function in 2316
 see 2313
 sulfonamides and 2311
 vesical 2314
 cystography in 2319
 (Fig) 2315
 occurrence 2317
 radiography 2319
 Calces renal anatomy 2245
 anomalies 2284
 Callositas 3165
 Callus 3165
 diff diag (Table) 3165 3196
 formation in healing of fracture 2937
 Calomel, cathartic dosage 1931
 ointment description 191
 in venereal prophylaxis dosage 2501
 prescriptions 3122
 Caloric test, 2018
 Calories diet high in, 671
 in weight loss 699
 low in 670
 in osteo-arthritis 2463
 Calvé-Legg Lerther disease 2927
 hmp in (Table) 2756

- Campbor** 3870
 in asphyxia neonatorum 2770
 effect on muscle 3483
 in skin diseases, 3131
 therapeutics, 3370
Campometer 1512
Canavalin (Table) 103
Cancellous bone histology 2796
Cancer See *Carcinoma(s)*
Cancerum oris 1697
Candies food value of 653
Candle jar in culture of bacteria 140
Canities, 3114
Cannabis indica poisoning ophthalmic manifestations 1596
Canning effect on food values 656
Cannon's emergency theory 1263 1390
Cantharides in alopecia, prescription, 3116
Capillary blood, collection, 3694
Capillary normal value 3693
 test, 3708
 types, 1108
 function, 784
 hemorrhages in scurvy (Fig) 628
 lake (Fig) 781
 permeability calcium and, 603
 disturbances 1119
 dye test for 713
 edema and 712
 pulse diff diag (Table) 3591
 toxicous hemorrhage 1121
Capsule bacterial chemistry of 138
 morphology of 137
 stain Hiss technique of 111
Cauterization 2812
Caput succedaneum, cephalhematoma and 2772
 diff diag (Table) 2774
Car sickness 3376
Carate See *Pinta*
Carbamone 530
 in amebiasis dosage 530
 toxicity 530
Carbohydrate absorption 589
 diet high in 675
 digestion 588
 fat metabolism and 590
 fat ratio in normal diet 660
 in fatigue 2991
 in grain, 642
 high low fat diet 672
 in Addison disease 1276
 in hepatitis 1967
 in Simmonds disease 1174
 in infantile diarrhea 2752
 low diet in hyperinsulinism 1245
 metabolism 587
 disturbances 732
 in milk 631
 utilization 589
Carbolfuchsin, office preparation of 49
 staining with 52
Carbon dioxide 3829
 administration, 3830
 combining power of plasma (Table) 5
 heart muscle function and 776
 inhalation in hiccough 4009
 in pulmonary atelectasis 2063
 as keratolytic 3116 3138
 poisoning clinical manifestations (Table) 747
Carbon dioxide poisoning diagnosis (Table) 747
 occupations susceptible to (Table) 747
 treatment at (Table) 747
 snow in acne vulgaris 3865
 in basal-cell epithelioma, 3222
 use of 3785
 tension, calcium metabolism and 2790
 therapeutics 3330
disulfide poisoning clinical manifestations (Table) 747
 diagnosis (Table) 747
 occupations susceptible to (Table) 747
 treatment (Table) 747
monoxide poisoning clinical manifestations (Table) 747
 diagnosis (Table) 747
 occupations susceptible to (Table) 747
 treatment (Table) 747
tetrachloride 1837
 poisoning clinical manifestations (Table) 753
 diagnosis (Table) 753
 occupations susceptible to (Table) 753
 treatment (Table) 753
 toxic hepatitis due to, 1063
Carbonated beverages food value of 656
Carbuncle 3242
 diff diag (Table) 3368
 of face diff diag (Table) 3 66
 of neck, diff diag (Table) 3 34
 of scalp diff diag (Table) 2334
 treatment 3972
 (Fig) 3971
 penicillin in (Fig) 3247
Carcinogenic chemicals, 3 13
 effect of estrogens 2517
Carcinogens 573
Carcinoids 1891
Carcinoma 572
 of ampulla of Vater 1996
 of bile ducts 1996
 of bladder 232
 cytoscopia (Fig) 2324
 of bone 2943
 metastatic diff diag (Table) 2830
 of breast 2531
 electrocardiogram in (Fig) 2 9
 (Fig) 2531
 of bronchi 2077
 (Fig) 2076
 of cervix uteri, 2551
 classification 255
 epidermoid (Fig) 2552
 clinical manifestations 573
 of colon 1889
 (Fig) 1889
 committee League of Nations cancer of cervix classification by 2552
 complications 574
 diagnosis 574
 of epiglottis 2070
 of esophagus 1758
 (Fig) 1739
 etiology 572
 of eye (Table) 1566
 of eyelid border (Fig) 1567
 of gallbladder 1993
 gastric, Bismuth-Oppler bacilli in (Fig) 3723
 contents in (Table) 3726

- Carcinoma gastric diff diag (Table) 1787
 grading of malignancy in 576
 of gums 1718
 of hepatic flexure pain in right upper quad-
 rant in diff diag (Table) 1959
 inoperable management of 577
 of kidney 2326
 of larynx 2072
 (Fig) 2073
 metastatic 1962
 of liver primary 1962
 of lung 2078
 (Fig) 2079
 metastatic 2081
 of nasal accessory sinuses 2068
 of nasopharynx irradiation of (Fig) 2069
 of oropharynx 1718 2070
 of ovary 2371
 of pancreas 1913
 of penis 2440
 of prostate 2449
 of rectum 1917
 abdominoperineal resection in 1918
 (Fig) 1917
 of scrotum 2440
 of skin 2317
 metastatic 2327
 of stomach 1815
 pain in right upper quadrant in diff diag
 (Table) 1959
 pernicious anemia and 1081
 of thyroid gland 1221
 of tongue 1718
 of tonsil 2070
 treatment 577
 of uterus 2562
 of vulva 2549
 Carcinomatous metastatic pain in diff diag
 (Table) 2941
 of pericardium 967
 peritoneal 1934
 phosphatase activity in diff diag (Table)
 728
 Cardiac *See also Heart*
 action current 781
 regulation of 777
 arrhythmias 873 *See also Auricular fibril-*
 lation Auricular flutter Bradycardia,
 Tachycardia Heart block
 postoperative treatment 4018
 valvular defect predisposing to 972
 asthma in back ward failure 711 742
 in coronary artery syphilis, 1012
 auscultation technic 3548
 cachexia 945
 chambers fluoroscopic examination of
 795
 circulation 773
 cirrhosis in backward failure 944
 compression 872
 conduction 774
 contour normal 79
 (Figs) 792 793 795
 contractility 773
 cycle 776
 damage in rheumatic fever 190
 decompensation water and, 687
 dilatation, 870
 clinical manifestations 870
 diagnosis 871
 dilation treatment 871
 in Mutsugamu hi fever 882
 disease congenital 953
 clinical manifestations 961
 (Table) 964
 complications of 965
 cyanosis in classification 962
 diff diag (Table) 863 964
 prognosis in 965
 treatment 965
 pregnancy and 2671
 prenatal care 2672
 types 956
 dulness in pericarditis 1009
 edema, mercurials in 2261
 protein content of 712
 urea in dosage 2260
 efficiency increase of in congestive failure,
 950
 excitability 772
 failure 941 *See also Congestive heart failure*
 function test of two step exercise 789
 hypertonicy 772
 hypertrophy 867
 clinical manifestations 869
 diagnosis 870
 diff diag (Table) 863
 treatment 870
 hypotonus 772
 impulse conduction of 773
 invalid in backward failure 943
 obstetrics in 864
 occupations for 865
 surgery in 863 3999
 irregularity diff diag (Table) 892
 in lobar pneumonia 2178
 shock in 935
 murmurs 3549
 characteristics 3550
 in congenital heart disease 963
 in endocarditis 1020
 (Fig) 3550
 in rheumatic myocarditis 1014
 muscle drugs acting on 854 3887
 neuroses 897
 output 780
 pain in chronic glomerulonephritis, 2385
 diff diag (Table) 892
 pulsations normal 3599
 rhythm alterations 3551
 roentgenography 792
 in infancy indications 2738
 sounds abnormal 3549
 normal, 3548
 alterations in, diff diag (Table) 778
 (Fig) 3548
 stimulants 3887
 digitalis as 851
 in diphtheritic myocarditis, 1013
 tamponade 872
 in hypotension diff diag (Table) 917
 in pericarditis 1009
 thrill in congenital heart disease 863
 tonus 772
 variations in (Table) 772
 Cardiologist, 3801
 Cardiolytic in pericarditis 1011
 Cardiomyopathy in coronary occlusion, 992
 Cardio-omentopexy in coronary occlusion,
 992

- Cardiorenal disturbances papilledema in, *diff diag* (Table) 1579
 reduction in visual acuity in *diff diag* (Table) 1638
- Cardiospasm 1724
 differentiation from carcinoma 1725
 drugs in 1727
 (Fig) 125
- Cardiovascular anomalies *diff diag* (Table) 910
 complications in hypertension, 806
 disturbances coma in *diff diag* (Table) 1224
 congenital, 923
 convulsions in *diff diag* (Table) 1519
 ophthalmic manifestations 1588
 unconsciousness in *diff diag* (Table) 1991
 system in pregnancy 2623
- Carditis, acute rheumatic, electrocardiographic diagnosis of 809
 (Fig) 833
 rheumatic, electrocardiogram in (Fig) 870
 833 830
- Caries, dental 1702
 in vitamin A deficiency 619
- Carotene dosage 610
- Carotid artery 3615
 throbbing of *diff diag* (Table) 3516
 gland 1239
 sheaths 3316
 sinus denervation indications 3093
 syncope 922 1400
 syndrome in hypotension *diff diag* (Table) 917
- Carotidemia *diff diag* (Table) 3242
- Carpal bones fractures 3033
 cast in (Fig) 3035
 treatment (Table) 3015 3016
 dislocation 2976
 treatment (Table) 2971
- perilunate fracture dislocation, 3034
 tuberculosis (Fig) 2946
- Carrer in amebiasis 624
 treatment, 431
- bacillary dysentery treatment 248
 in diphtheria, 305
 in hemolytic streptococcal infection 161
 in infectious diseases 65
 in meningococcal infections 210
 in paratyphoid infection 239
 in pneumococcal infections 203
 in Salmonella infections 239
 in typhoid fever 227
 treatment 239
- Carrion's disease 384
- Carron oil evaluation 3117
- Cartilage disturbances 3301
 physiology 2797
 acetabular fracture (Fig) 2961
 lesions of 2960
 rupture *diff diag* (Table) 2810
- Cartwheel fracture 2983
- Cascade stomach, 1805
 (Fig) 1805
- Cascara sagrada, 1829
 in infancy dosage 2745
- Case finding in tuberculosis 265
 prevention, 273
- Cast(s) urinary 3682
 (Fig) 3682
- Cast(s) urinary types 3682
- Castellani paini 3303
- Castor oil 1829
 in skin diseases 3117
- Castration, 2105
- Cat bites treatment 3462
- Cat reaction morphine 3353
- Catabolism 19
- Catelepsy definition 1310
- Cataplexy definition 1310
- Cataract 1, 32
 congenital discussion of 1553
 secondary discussion of 1553
 senile (Fig) 1, 93
 extraction 1337
- Cathartics 1827
 calomel as 131
 in infancy dosage 2745
 poisoning *diff diag* (Table) 211
 saline preparations 1830
 in tuberculosis 20
- Catheter method of retaining (Fig) 2240
 sterilization of 2232
 tracheal (Fig) 2702
 types 2, 37
 (Fig) 2238 2239
 wax bulb 2317
 woven (Fig) 2239
- Catheterization of female, 2235
 of male 2256
 steps in (Fig) 2235 2236 2237 2238
 of ureters 2249
- Cations pharmacology 3923
 therapeutics 3929
- Caudal anesthesia, 3922
 method of administration (Fig) 3921
 needle insertion in (Fig) 3921
 in obstetrics 2680
 action (Fig) 2687
 administration, 2683
 advantages 2683
 apparatus 2683
 (Fig) 2682
 catheter technic 2686
 complications 2689
 circulatory collapse, 2690
 convulsions, 2690
 infection, 2690
 conduct of labor in 2709
 contraindications 2681
 dangers 2682
 induction of analgesia in 2688
 insertion of needle in (Fig) 2690
 needle technic, 2685
 precaution in 2686
 test injection in 2686
- Causalgia, 3229
diff diag (Table) 3250
- Caustic chemicals in treatment of warts 3292
- Cauterization of anal fissure, 3918
 of cervix in endocervicitis 2901
 for control of bleeding 3359
 of corneal ulcer 1337
- Cavernositis, acute 2434
 chronic 2454
 tuberculous, 2455
- Cavernous angioma 3202
 (Fig) 3200
 breathing 2540
diff diag (Table) 3542

- Cavernous lymphangioma 966 3201
 sinus thrombosis 1447 2130
 ophthalmic manifestations 1587
 Cavitation in coccidioidomycosis 501
 in tuberculous pneumonia 2203
 Cecum actinomycosis of 492
 Celiac disease 1037
 in newborn diff diag (Table) 2782
 Cell(s) alterations in 6
 bacterial morphology 137
 as biologic unit 3
 catabolism 10
 degeneration 7
 division 3
 fixed 3
 growth 6
 hepatic 1047
 immortality 10
 life span, 6
 membrane 3
 in bacteria 137
 nucleated normal count (Table) 1043
 nucleus 3
 regeneration 10
 wandering 3
 Cellular interchange 6
 Cellulitis orbital 1615
 penicillin in 1553
 treatment 3960
 Cellulose function 599
 Centipedes bites 3107
 Centrifugal shock 925
 Centrosomes 3
 Cephalalgia 1507
 histamine 1510
 Cephalhematoma 2772
 diff diag (Table) 2774
 double (Fig) 2770
 Cephalin-cholesterol flocculation test 1950
 Cereasflexibility definition 3310
 Cereals composition (Table) 643
 food value 644
 in infant feeding 2755
 Cerebellar ataxia 1415
 lesions ophthalmic manifestations 1594
 reaction patterns 1406
 tumor gait in diff diag (Table) 3196
 Cerebellopontine angle reaction pattern 1426
 Cerebellum function 1288
 Cerebral agenesis 1406
 anemia 1456
 diff diag (Table) 1457
 aneurysms 1444
 causes (Table) 969
 diff diag (Table) 1437
 manifestations (Table) 963
 ophthalmic manifestations 1587
 angiospasm diff diag (Table) 1457
 apoplexy 1439
 arteries (Fig) 1440
 arteriosclerosis 1438
 diff diag (Table) 1437
 atrophy after aphyxia neonatorum 2768
 circulation abnormalities diff diag (Table) 1437
 compression 1452
 diplegia 1455
 edema, 1438
 control of in hypertensive encephalopathy 916
 Cerebral edema diff diag (Table) 1437
 in hypertension 1243
 embolization 1444
 diff diag (Table) 1437
 hemispheres function, 1283
 hemorrhage 1439
 coma in management 1410
 diff diag (Table) 1437
 fever in diff diag (Table) 1007
 fontanelles in diff diag (Table) 2729
 in hypertension 007
 hyperemia 1438
 diff diag (Table) 1437
 palsy 2948
 curate in 3800
 deformity in diff diag (Table) 2054
 poliomyelitis 460
 stimulants in infancy dosage 2744
 thrombosis 1444
 diff diag (Table) 1437
 ventricles function 1289
 vessels intermittent claudication of 1456
 Cerebriform mole 3205
 Cerebrospinal fluid 3734
 absorption 3734
 bacteriologic examination 3737
 bloody interpretation 3735
 chemical examination 3736
 globulin 3736
 sugar 3736
 sulfonamides 3736
 circulation 3734
 cocci in interpretation 3735
 collection 3736
 colloidal gold test in 3736
 decreased initial pressure interpretation 3735
 examination 3734
 in infancy indications 2739
 list (Table) 3735
 in spinal cord tumors 1484
 in syphilis 330
 fraction 1280
 globulin test 3736
 interpretation 3735
 hydrodynamics 3734
 increased initial pressure in interpretation 3735
 leukocytosis in interpretation 3735
 lymphocytosis interpretation 3735
 normal pressure 3734
 precipitin tests in 3738
 serologic examination 3736
 sugar in 3736
 sulfonamides in 3736
 xanthochromic, interpretation 3735
 meningitis 213
 joint pain in diff diag (Table) 2802
 pressure normal 3734 3735
 Cerebrum disturbances diff diag (Table) 1428
 Cerrus oxalate prescription 1736
 Cervical adenitis 2155
 complicating measles 414
 scarlet fever 179
 interarticular joints subluxation 2088
 lordosis development, 3035
 lymph nodes 3519
 lymphadenopathy diff diag (Table) 3518
 nb 2953

- Cervical rib anomalies, pain in, diff diag (Table) 2340
 congenital, 2317
 (Fig) 2319
 spine dislocation 2366
 traction in (Fig) 3007
 disturbances, diff diag (Table) 2318
 fracture 3005
 cast in (Fig) 3009
 treatment (Table) 3004
 fracture-dislocation of cast in (Fig) 3008
 synostosis, 2317
 diff diag (Table) 2799
- Cervicitis acute nonspecific, 2600
 chronic, nonspecific 2600
 gonorrheal, 2601
- Cervicovaginitis (Fig) 2 96
 trichomonal (Fig) 2596
- Cervix uteri, caps as contraceptives 2506
 carcinoma, 2551
 classification by League of Nations Carcinoma Committee 255
 cauterization, 2601
 disturbances, leukorrhea in diff diag (Table) 2583
 erosion, 2534
 (Fig) 2534
 eversion 2535
 examination, 2647
 fibroids 2551
 (Figs) 2552
 hypertrophy 2534
 lacerations, 2544
 nabothian cysts of 2550
 (Fig) 2550
 pathology 2551
 polyp 2550
 (Fig) 2550
 treatment, 2551
 radium therapy in, 25 1
 sarcoma, 2553
 Schiller test in, 2553
 stem, 2506
 stenosis 2535
 stump prolapse 2534
 syphilis 2605
 (Fig) 590
 tuberculosis, 2607
- Cesarean section, 2606
 indications 2606
- Cervitamin acid, 627 See also Vitamin C
 dosage in scurvy 1121
- Chaddock reflex (Table) 2594
- Chadwick's sign pregnancy 2600
- Chafing 3161
- Chagas disease 532. See also Trypanosomosis
- Chalazion 1611
 removal, 1556
 technic (Fig) 1611
- Chancre of anus (Fig) 335
 of cervix (Fig) 2590
 of face (Fig) 335
 of genitals, diff diag (Table) 3774
 distribution, 2589
 hard. See Chancre of syphilis
 intra-uterine, 2337
 of lip (Fig) 335
 of penis (Fig) 335
 of syphilis primary 3278
 (Fig) 3279
- Chancre, tuberculous, 3252
 diff diag (Table) 3275
- Chancroid, 268
 bacteriology 268
 bubo (Fig) 2549
 clinical manifestations, 268
 culture method in (Table) 311
 diff diag (Table) 3218
 diagnosis 269
 methods of (Table) 3 46
 by smear in (Table) 50
 of genitals, diff diag (Table) 3774
 of penis (Fig) 3275
 prophylactic chemotherapy 291
 serologic test for (Table) 59
 skin test, 311 (Fig) 289
 syphilis and, diff diag, 289
 treatment, 289
- Chapping 3172
 diff diag (Table) 3218, 3766 3296
- Charcot fever 2004
- Charcot's joint, 2923
 (Fig) 2952
 in syphilitic arthritis, 2929
- Charcot Marie-Tooth atrophy 2334
 diff diag (Table) 2387
- Charlebois 2395
- Chauffard Minkowski's disease 1061
- Chaufeur's fracture 2983
- Chaulmoogra oil in leprosy 277
 Heuser mixture of 277
- Cheek bones, fracture 3013
 treatment (Table) 3004
- Cheese, 637
 composition (Table) 633
- Cheilitis, 1693
 due to lipstick, 3177
 in riboflavin deficiency (Fig) 624
 suppurative treatment, 1694
- Cheilos denture, 1690
- Chemical(s) carcinogenic, 3215
 caustic, in treatment of warts, 329
 constituents of blood 3
 injuries 3163
 origin of 16
 of respiratory tract (Table) 206
 shock due to, 935
- Chemoprophylaxis, 63
- Chemotherapeutic index, 87
- Chemotherapy See also the various
 drugs, e.g. Sulfathiazole, Sulfonamides,
 Penicillin, etc.
 in anthrax 293
 in arthritis, 2910
 in cervical adenitis 2155
 in congenital heart disease 965
 curative in minor surgery 3351
 in cystitis, 2345
 desperation, 114
 in endocarditis 1024
 in eye diseases 1552
 in faucial tonsillitis, 2154
 in gynecology 2501 2534
 in infectious diseases 73
 in lobar pneumonia, 2184
 in otitis media, 2150
 safeguards, 2151
 probatory 114
 prophylactic in minor surgery 2951
 in rheumatic fever 197

- Chemotherapy in pylephlebitis 1961
 in respiratory infection 2108
 in sinus thrombosis 1448
 in skull fractures 1451
 in syphilis 349
 in tetanus 208
 in thoracic surgery 2041
 in tuberculosis 267
 in valvular defect, 975
 in venereal infections 2452
 Chenopodium oil 1896
 Chest aspiration diagnostic 3511
 barrel-shaped in pulmonary emphysema (Fig) 2057
 breathing exercises 3768 3769
 dermatoses of diff diag (Table) 3368
 expansion diff diag (Table) 3528
 film tuberculosis (fig) 4027
 fluoroscopy diagnostic 3741
 in infancy examination 2731
 injuries 3952
 manifestations (Table) 2046
 treatment 3953
 pain in acute pleuritis 2220
 diff diag (Table) 2080
 in lobar pneumonia 2173
 in tuberculous pneumonitis 2203
 percussion of 3333
 radiography in infancy indications 2735
 seborrheal dermatitis of 3425
 size of infants (Table) 2727
 sucking wound of treatment 3057
 wall abnormalities noted by auscultation
 diff diag (Table) 3540
 noted on palpation diff diag (Table)
 3034
 noted by percussion diff diag (Table)
 3338
 anatomy 3322
 reflections of thoracic viscera on 3507
 tumors 2081
 visible abnormalities of diff diag (Table)
 3523
 Cheyne Stokes breathing 2016
 Chiasm lesions ophthalmic manifestations
 1884
 Chickenpox 420
 diff diag (Table) 171 422
 immune serum evaluation 82
 immunity after 76
 quarantine data on (Table) 66
 rash in diff diag (Table) 172
 symptoms other than rash in, diff diag
 (Table) 2790
 Chigger bites 3190
 prevention 3190
 (Fig) 3190
 Chigoe bites 3190
 Chubham 3173
 diff diag (Table) 3162 3214 3250 3266
 3296 3306 3334
 of ear diff diag (Table) 2113
 (Fig) 3160
 of nose diff diag (Table) 2110
 Childbirth, mental disorders and 1283
 Children abdominal pain in diff diag (Table)
 2130
 anemias diff diag (Table) 1087 (Table) 2338
 anterior pituitary deficiency (Fig) 1168
 cryptogenic fevers of diff diag (Table) 2760
 Children dermatoses of diff diag (Table)
 3360
 diets in 2756
 disturbances 2758
 drugs in 2742
 gas disturbances in diff diag (Table) 2736
 gonococcal infection in sulfathiazole 2583
 immunization time table for 80
 impetigo furfuraceous of 3252
 malnutrition in 2783
 normal development, 1290
 pericarditis in, precordial bulge in 1009
 Chills in acute prostatitis 2471
 diff diag (Table) 32
 fever and 31
 in lobar pneumonia 2173
 in sulfonamide therapy 95
 Chimney sweep cancer 2440
 Chinofoin in amebiasis 530
 Chinoplasmin in malaria, 523
 Chitral fever See *Sandy fever*
 Chloasma diff diag (Table) 3266
 gravidarum 2625
 pigmentation in diff diag (Table) 3184
 Chloracetophenone 743
 Chloral effect on muscle 3888
 hydrate 3836
 dosage (Table) 3836
 edema in toxemia 2643
 in infancy dosage 2743 2745
 pharmacology 3836
 prescription 3836
 in skin diseases 3117
 therapeutics 3836
 poisoning ophthalmic manifestations, 1596
 treatment 3838
 Chloramine T in wound dressing 3117
 Chlorellin (Table) 183
 Chloride administration in iododermas, dosage,
 3342
 metabolism 593
 disturbances 731
 in plasma (Table) 5
 poisoning hypochloremia in, diff diag (Ta-
 ble) 730
 in serum (Table) 5
 Chlorine as antiseptic 3117
 poisoning clinical manifestation (Table) 749
 diagnosis (Table) 748
 occupations susceptible to (Table) 748
 treatment (Table) 748
 Chlorobutanol dosage (Table) 3836
 Chloroform toxicology 3838 3926
 in skin diseases 3117
 toxic hepatitis due to 1963
 Chloroma, 1105
 Chloropicrin as lung irritant 745
 Chloroquine 522
 Chloremia 1083
 tropical 1903
 Chocolate cysts of ovary 2538
 Choked disk See *Papilledema*.
 Cholangogues 1987
 Cholangiography 1989
 Cholangitis jaundice in diff diag (Table)
 1954
 lenta 2010
 jaundice in diff diag (Table) 1955
 suppurative 2010
 Cholecystectomy 1901

- Cholecystectomy** indications for 3994
 postoperative diet in, 638
 in typhoid carrier 239
Cholecyst gastrotomy 1991
 indications for 3993
Cholecystitis acute calculous 2009
 noncalculous 2007
 in brucellosis 318
 chronic calculous, 2010
 catarrhal (Fig) 2003
 noncalculous 2003
 jaundice in diff diag (Table) 19 5
Cholecystography 1989 2000
 (Fig) 1983
Cholecystotomy 1991
 indications, 3993
Choledochitis, 2004
 suppurative 2010
Choledocholithiasis 2004
 jaundice in diff diag (Table) 1954
Choledochotomy 3993
Choledochus cyst 1995
 (Fig) 1994
 jaundice in, diff diag (Table) 1955
Cholelithiasis 1997 2002
 asymptomatic, 1999
 in diabetes mellitus 1248
 (Figs) 1998 1999
 pernicious anemia and 1081
 treatment 2002
Cholemia 1935
Cholera Asiatic, 249
 animal inoculation in (Table) 62
 bacteriology 250
 cultures in (Table) 54
 diagnosis of 250
 ly smear (Table) 50
 epidemiology 2 0
 forward failure in (Table) 954
 immunity after 76
 neutralization test in, 59
 penicillin in evaluation, 110
 prevention, 250
 serologic test for (Table) 59
 strptomycin in 251
 treatment 250
 vaccine 250
 vibrio vaccine from evaluation 78
Choleretics 1989
Cholestoma, diff diag (Table) 3608
 (Fig) 2146
Cholesterol, blood, disturbances of *See Hypercholesterolemia Hypocholesterolemia*
 normal values, 737
 in gallstones 1997
 metabolism 595
 partition determination, 1949
 in plasma (Table) 5
Cholesterosis 2003
 jaundice in diff diag (Table) 1955
Choline 627 1971
 in fat metabolism 595
Choline drugs 3873
 contraindications 3874
 dosages (Table) 3874
 list 1394
 pharmacology 3876
 poisoning treatment 3875
 preparations (Table) 3874
 prescription, 1775
Cholinergic drugs therapeutics 3876
 (Table) 3874
 toxicology 3373
 nervous system 4 3872
 (Fig) 3873
Chondritis of larynx 2164
Chondroma 2839
 diff diag (Table) 2836
 (Fig) 2834
Chordee 2411
Chorea, autohemotherapy in 81
 electrocardiogram in (Fig) 839
 Huntington, 1417
 irregular gait in (Table) 2737
 ophthalmic manifestations, 1584
 pregnancy and, 2647
 in the mastic lever 190
Choreiform movements diff diag (Table) 2885
Choromeningitis lymphocytic 448
 animal inoculation in (Table) 111
 diff diag (Table) 443 450
 serologic test in (Table) 59
Choroid nevi, 2555
 (Fig) 2556
 of the eye, 2443
 diff diag. (Table) 2444
 vaginal bleeding in, diff diag (Table) 2664
Chronic gonadotropin, therapeutics 3896
Chromocystitis acute, 1635
 (Fig) 1634
Choroid anatomy 3615
 miliary tuberculosis (Fig) 1464
 plexus coagulation in hydrocephalus 1411
 rupture, symptoms (Table) 1371
Choroid retina, definition, 1562
Chromiditis 1633
Christians-Schüller disease *See Hand Schüller*
 Christians syndrome
Chromaffinomas adrenal, 1264
Chromidrosis 3463
Chromium poisoning clinical manifestations
 (Table) 764
 diagnosis (Table) 764
 occupations susceptible to (Table) 754
 treatment (Table) 754
 tetroxide 3117
 in skin diseases 3138
Chromoblastomycosis is 3316
 of leg (Fig) 3315
Chromophobe adenoma, 1176
Chromophytosis 3300
 diff diag (Table) 3154
Chrysarobin, in lichen simplex, 3230
 ophthalmic manifestations 1596
 prescription, 3118
 in psoriasis prescriptions, 3420
 in skin diseases 3117
Chrysarobin diff diag (Table) 3243
Chrysarobin as vector (Table) 42
Chrysotherapy in rheumatoid arthritis 2922
Chvostek sign positive in azotemia, 2279
 tetany 723
Chylocele 2433
Chylothorax 2032
Chyme ejection 1742 1743
Cicatrices 3166
Cigarettes ingredients 3884
Cilia, removal, 1555
Ciliary body anatomy 3616
 injection, diff diag (Table) 1524

- Cimet rotundatus* as vector (Table) 42
- Cinchonum* 862
- Cinchophen* evaluation 3833
in gout contraindication 2977
toxic hepatitis due to 1963
- Cinnal ar* in pruritus ani 3122
- Circulation* 771 See also *Circulatory system*
arterial tests for 791 3381
capillary lake of (Fig) 781
cardiac 773
fluids of physiology 5 702
involuntary nervous system and (Table) 1976
lesser hypertension of 319
mechanism 781
peripheral tests for 791
time 782 787
 ether time 787
 taste time 788
- Circulatory deficiency* 929 See also *Backward failure* *Forward failure*
system 770
 congenital abnormalities 952
 contrast coentgenography in (Table) 3749
 disturbances abdominal pain in diff diag (Table) 1748
 rigidity in diff diag (Table) 1746 1747
 albuminuria in diff diag (Table) 2370
 anorexia in diff diag (Table) 1779
 ascites in diff diag (Table) 1971
 azotemia in diff diag (Table) 2776
 constipation in, diff diag (Table) 1833
 cough in diff diag (Table) 2050
 diagnosis methods 787
 diff diag (Table) 404
 diminution of bearing in diff diag (Table) 2019
 drugs in 354 3897
 electrocardiographic diagnosis of 369
 dyspepsia in diff diag (Table) 1771
 epigastric pain in diff diag (Table) 1759
 fever in, diff diag (Table) 1006
 hematemesis in diff diag (Table) 1764
 hematuria in diff diag (Table) 2507
 hemoptysis in diff diag (Table) 2039
 hepatomegaly in diff diag (Table) 1973
 of infancy 17 2759
 ironoma in diff diag (Table) 1905
 mechanical 867
 diff diag (Table) 968
 menorrhagia in diff diag (Table) 2557
 neurogenic 1000
 nose bleed in diff diag (Table) 2193
 oliguria in diff diag (Table) 2232
 organic elimination 953
 pain in abdominal, diff diag (Table) 1749
 in chest diff diag (Table) 2099
 in extremities in diff diag (Table) 2803 2808 2909
 in left upper quadrant diff diag (Table) 1942
 lumbar diff diag (Table) 2274
 on swallowing in diff diag (Table) 1729
 physiological but 867
 respiration in, diff diag (Table) 2017
 shock due to 933
- Circulatory system* disturbances swellings in diff diag (Table) 2927
 syncope in 924
 in systemic disorders diff diag (Table) 951
 tinnitus in diff diag (Table) 2141
 vaginal bleeding in diff diag (Table) 2505
 vertigo in diff diag (Table) 2020
 treatment 851
 infections 1005
 inflammations of 160,
 neoplasms of 967
 physiology 771
 surgery of 863
 treatment methods 851
- Circumcision* technique 3036
(Fig) 3038
- Circumstantiality* definition 1897
- Cirrhosis of liver* 1969
 biliary 1972
 ascites in diff diag (Table) 1921
 differentiation from portal (Table) 1975
 (Fig) 1974
 jaundice in, diff diag (Table) 1934
 (Fig) 9
 portal 1969
 in backward failure 944
 clinical manifestations 1970
 differentiation from biliary (Table) 1975
 jaundice in diff diag (Table) 1934
 laboratory tests in 1970
 treatment 1971
 pigmentary See *Hemochromatosis*
 external puncture technique 3783
- Citra* 631 See also *Yasania P*
- Citron* (Table) 103
 description 115
- Claudication* intermittent of cerebral vessels 1436
 paravertebral nerve block for 353
 in peripheral vascular disease (Table) 296
 time definition 792
- Clavacin* de caption 103 116
- Clavatin* (Table) 103
- Clavicles* absence 2924
 dislocation at acromion 2974
 of sternum 2974
 fracture 3016
 (Fig) 3017
 splintage in (Fig) 2974
 treatment (Table) 3014
- Claviform* (Table) 103
- Clavus* 3089 3105
 diff diag (Table) 3296
- Cleft foot* 3097
 (Fig) 3097
- Clay shoveler's fracture* 2993 3010
- Cleanliness* in staphylococcal infections 136
- Cleaning* of wounds mechanical 2911
- Cleft lip* 1693
 (Fig) 1684
 palate 1686
 tongue 1684
- Clefts of skin* diff diag (Table) 2718
- Cleidocranial dysostosis* 2824
 deformity in, diff diag (Table) 2954
 (Fig) 2824
- Climacteric, female* See *Menopause*

- Chlamydiae male** 2414
 androgen therapy in do age 2417
 early d ff diag (Table) 2480
Climate common cold and 381
Climatic bubo 471
Climatotherapy 4761
 in backward fall re 2417
 in the home 3763
 indications 3762
 in osteo-arthritis 2864
 in rheumatic fever 197
 in rheumatoid arthritis, 2919
 in tuberculosis 269
Clonorchis mesasiatica differential characteristics (Table) 3733
 sinensis geographic distribution 1980
 life cycle 1982
 morphology (Table) 3732
Clorazepate, dosage, 119
Clostridia, bacteriology 300
 infections penicillin in 111
 streptomycin in 111
 sulfonamide in 92
Clostridium botulinum 311
 fallax 300
 histolyticum 300
 oedematiens 300
 perfringens 300
 septicum 300
 sporogenes 300
 tetani 294
 welchii 300
 in intestinal tract, 149
Clot retraction estimation 3706
 normal values (Table) 3693
Clubbed fingers in bronchial carcinoma 2077
 in congenital heart disease 262
 diff diag (Table) 2084
 in endocarditis, 1023
 nails in 3438
 in pulmonary carcinoma 2078
 toes in congenital heart disease 262
 in endocarditis 1023
Clubfoot See *Talipes*
Clubhand, 2622
 (Fig) 2893
Clutton's joint in pre-natal syphilis 2327
 in syphilitic arthritis 2339
Coagulants in acute hemorrhage 1059
 list 3897
Coagulase 145
Coagulation time normal values (Table) 3693
 technic 3706
Coal tar ointment prescription, 3150
 prescriptions 3533
Coarctation of aorta, 259
 manifestations (Table) 264
Cocaine antidote phenobarbital as (Table) 3841
 abuse 3916
 in infancy dosage 2746
 in local anesthesia 3916
 pharmacology 3915
 in respiratory disturbances dosage 209
 hook from 295
 for absorption of nasal mucosa, 3508
 substitutes in minor surgery (Table) 3914
 preparations, 3915
 uses 3915
Cocci in ophthalmic manifestations 1696
Coccal infection 151
 chills in (Table) 22
 fever in (Table) 26
 leukocytes in diff diag (Table) 1097
 ophthalmic manifestations 1601
Cocci description 187
Coccidioides granuloma, 499 See also *Coccidioidomycosis*
 cutaneous manifestations 3315
Coccidioides immitis, 487
 infection 499 3314
Cocci in skin test 3314
Coccidioidomycosis 499
 acute clinical manifestations 500
 chronic clinical manifestations 501
 cultures in 501
 cutaneous manifestations 3315
 diagnosis 501
 (Fig) 486
 joint pain in diff diag (Table) 2802
 of lung (Fig) 2212
 skin test in (Table) 501
 treatment 502
Coccygodynia (Table) 1493 3012
Coccyx fracture 3012
Cochin China diarrhea, 1905
Cochlear neuritis 1485
Cocoa, 656
 butter uses 3129
Codeine 3463
 in cough 2029
 in infancy dosage 2743
 pharmacology 3366
 prescriptions 3355
 therapeutics 3366
 toxicity 3366
Cod liver oil 621
 in leprosy 277
 in skin diseases 3117
 supplement in infant feeding 2753
Coffee 656 See also *Caffein*
Cogwheel breathing 3340
 diff diag (Table) 3343
Coin sound 3511
 diff diag (Table) 3538
Costus injuries following 2534
 interruptus 2410
Colchacin in gout dosage 2874
 in rheumatoid arthritis 2921
 therapeutic test for gout 2873
Colchicum dosage (Table) 3832
Cold agglutinin test, 3711
 technic (Table) 3711
 common 391 2114
 prevention 392
 quarantine data on (Table) 68
 treatment 394
 cures drugs in 393 395
 evaluation 394
 injuries due to 3171
 paroxysmal hemoglobinuria due to 1075
 in physical therapy 3785
 (Table) 3785
 quarantine 3796
 recurrent, 2153
 sensitivity to, in myxedema, 1194
 shock prevention and 398
 sores 433
 treatment of eye disorders 1547
 urticaria, 3362

- Cold vaccine evaluation 70 2118
 Colectomy complete 1836
 indications for 3091
 partial 1836
 Colic biliary 2000
 lead treatment 765
 renal 2315
 drug therapy in 2320
 Coliform arthropathy diff diag (Table) 2878
 Colitis acute 1878
 allergic 1841
 due to poisonings with heavy metals 1841
 in mercury poisoning 766
 mucous 1846
 ulcerative See *Ulcerative colitis*
 uremic 1841
 Collar button abscess definition 3073
 Colles fracture 3029
 (Figs) 3029 3029 3030 3031 3032
 treatment (Table) 3015
 Collin's hitch (Fig) 2203
 Collodion in herpes zoster 437
 in skin diseases 3118
 Colloidal bath 3133
 gold test 3736
 types of reactions (Fig) 3737
 silver preparations action 184
 uses 186
 Collyrium for eyes 1548
 Coloboma congenital of eyelid 1560
 (Fig) 1561
 macular 1563
 (Fig) 1563
 Colon adenoma, 1865
 (Fig) 1867
 anatomy 3563
 bacillus bacteremia 249
 immunity to 248
 infections 248
 treatment 249
 antibiotic 92 111
 in urinary infections 2334
 Carcinoma left half 1891
 right half 1898
 (Figs) 1889 1890
 dilatation congenital 1871
 diverticulosis 1868
 (Fig) 1869
 examinations for 1822
 irrigation 1824
 in renal insufficiency 2 82
 in urticaria 3549
 irritable 1846
 polyposis 1865
 (Fig) 1867
 roentgenography of 1822
 (Fig) 1854
 surgery 1833
 postoperative care 1837
 diet 659
 preoperative care 1835
 diet 683
 treatment, methods 1823
 Colony formation in bacteria 139
 Color blindness diff diag (Table) 1535
 changes in arterial insufficiency test for 3581
 in peripheral vascular disease (Table) 296
 fields (Fig) 1542
 index of blood normal (Table) 1046
 technic 3703
 Col revere disturbances diff diag (Table) 1535
 examination for 1541 3627
 perversions diff diag (Table) 1535
 Colorado tick fever 384
 diff diag (Table) 28
 Colorimeter Dubosq (Fig) 3714
 Colorthaphy 1835
 indications for 3093
 Colostomy 1835 1918
 diet after 689
 double-barreled 1836 3093
 indications for 3093
 Coma 1295
 in cerebral hemorrhage 1439
 management 1442
 diabetic treatment, 1257
 electrocardiographic changes in 808 833
 fever in diff diag (Table) 718
 diff diag (Table) 1294
 emergency treatment 1295
 Combat fatigue 2568
 Comedones 3066
 definition 3104
 of ear diff diag (Table) 3306
 of nose diff diag (Table) 2110
 Commensalism 37
 bacterial 146
 Common cold 391
 Communicable diseases See also *Infectious diseases*
 definition 64
 Compensatory hypertrophy 7
 Complement fixation test in amebiasis 527
 in diagnosis (Table) 59
 interpretation of 58
 in pertussis 281
 in Rocky Mountain spotted fever 379
 in smallpox 427
 in syphilis 334
 technic 57
 in typhus fever 378
 Complex Freud's definition, 1339
 Complications postoperative See *Postoperative complications*
 Compress 3790
 Compression cerebral, 1452
 apical cord 1457
 Compulsion definition 1309
 in neuroses 1345
 neurons 1347
 Concentration test for renal function 2261
 Conception prevention 2502
 combined methods 2503
 Concomitant strabismus mechanism 1629
 Concretio cordis in pericarditis 1010
 Concussion brain 1451
 treatment 1451
 Condensed milk, 655
 in infant feeding 2754
 Condiments 653
 composition of (Table) 653
 Condom types 2302
 Conduct disorders 1359
 Condyles tibial fracture of treatment (Table) 3038
 Condyloma acuminatum 1914 3291
 of vulva 2593
 latum 3281
 diff diag (Table) 3274
 in secondary syphilis 2691

- Confabulation definition 1299
 Conflict Freud's definition 1338
 Confusion definition 1293
 Congenital abnormalities of circulation 953
 of eye 1500
 of female reproductive system 2529
 of gallbladder 1993
 of intestines 1864
 of male reproductive system 2421
 of nervous system 1407
 of oropharynx 1693
 of respiratory system 2043
 of skeletal system 2816
 of urinary system 2284
 anemia of newborn, 1069
 diff diag (Table) 1067
 atele ta ia, 2770
 fractures 2831
 heart disease, 953
 clinical types 956
 complications 965
 prognosis 965
 treatment, 965
 hydronephrosis 2984
 hydrops foetalis 1068
 miosis 1560
 mydriasis 1860
 pyloric stenosis 1797
 (Fig) 1798
 syphilis 532 2787
 torticollis 2816
 (Fig) 2817
 Congestion gastric 1762
 Congestive heart failure 920 941
 backward 941
 ascites in diff diag (Table) 1021
 in beriberi heart 1015
 clinical manifestations 942
 congenital, 963
 contraception in 947
 in coronary occlusion 985
 cylindruria in 944
 edema in, 711 742
 diff diag (Table) 717
 fever in 945
 diff diag (Table) 1007
 postoperative treatment 4018
 symptomatic therapy 948
 treatment 945
 basal metabolism in, diff diag (Table) 720
 in coronary artery syphilis 1012
 dentalis in 858 951
 edema in 711
 electrocardiogram in (Fig) 823
 forward 920
 hyperchloremia in diff diag (Table) 73
 in hypertension, 906
 in hypotension, diff diag (Table) 917
 injection in 832
 phlebotomy in 852 950
 postoperative treatment 4018
 prophylaxis 945
 sinus tachycardia in 874
 treatment, 945
 xanthine in dosage 2260
 Congo red test in amyloidosis 7
 Conidia, definition 485
 Conjunctiva, anatomy 3612
 Conjunctiva, application of silver nitrate to 1554
 biopsy 1547
 chemosis diff diag (Table) 16 7
 cultures 1546
 disturbances diff diag (Table) 1627
 epithelial scrapings of technic 1546
 foreign bodies in 1572
 hemorrhage of in pertussis 282
 injection diff diag (Table) 1524
 pemphigus of 3407
 smears 1546
 in infancy indications 2740
 xerosis (Table) 1591
 Conjunctivitis 1616
 allergic, 1648
 H granulosus 1622
 Béals 1623
 catarrhal, 1616
 (Fig) 1617
 complications 1619
 diagnosis lab aids for (Table) 1619
 diff diag (Table) 1618
 diphtheric 1621
 dysentery 1622
 etiology 1616
 exanthematous 1623
 follicular 1617
 glanders 1622
 gonorrheal 1621
 (Fig) 1617
 granulomatous 1623
 hay fever 1650
 inclusion, 1623
 influenza, 16 1
 isolation in 1619
 Koch Weeks 1621
 meningococci 1620
 Morax Axenfeld 162
 nodosa 1672
 phlyctenular 1648
 pneumococci 1620
 treatment specific, 204
 tyrothricin in, 106
 prophylaxis 1619
 staphylococci 1620
 streptococci 1620
 syphilitic, 1622
 traumatic etiology (Table) 1671
 symptoms (Table) 1571
 treatment 1619
 copper sulfate in 1555
 mercuric oxide in 131
 silver in dosage (Table) 135
 staphylococcus toxoid in 1551
 tularemia, 1622
 vernal 1650
 allergic in, 553
 (Fig) 1650
 yaws 1622
 zinc sulfate in 3152
 Connective tissues 3
 replacement, 10
 Consciousness clouding definitions 1293
 definition 1293
 loss of See Syncope
 Constipation diff diag (Table) 1852
 (Fig) 1848
 in infancy abdominal pain and diff diag (Table) 2730

- Constipation medicaments for 1825
 rectal avoidance of 1909
 (Fig) 1850
 treatment symptomatic 1850
 Constriction treatment 3961
 Consulting room 4013
 equipment 4017
 Consumption galloping 2176 2189
 Contact atopy 549
 (Fig) 3814
 control of in epidemics 38
 dermatitis 549 3330 3813
 allergen in 553
 in axilla diff diag (Table) 3253
 diff diag (Table) 3162 3266 3296 3346
 3360 3368 3378
 of ear diff diag (Table) 3306
 (Fig) 3331
 of genitals diff diag (Table) 3274
 of infancy diff diag (Table) 3146
 nail changes in 3456
 ophthalmic manifestations 1564
 oral manifestations 1609
 treatment 303
 local 5333
 in infectious diseases 71
 lenses 1838
 test in allergy technic 556
 Contagious disease definition 64
 Contaminated wound treatment 3960
 Contraception 2502
 in backward failure 947
 in cardiac invalid 863
 in epilepsy 1818
 in hemophilic 1119
 Contraceptive suppositories 2307
 Contractility cardiac 773
 Contracture Dupuytren 2897
 hysterical 2048
 Contrast bath 3790
 roentgenography (Table) 3742
 Contusion of heart cause (Table) 968
 manifestations (Table) 968
 of muscles 2957
 treatment 3904
 Convalescence 3756
 in coronary occlusion 900
 gravitation shock in 905
 Convalescent care and rehabilitation 4117
 serum 82
 in mumps 483
 in pertussis 284
 in scarlet fever 181
 Conversion neurosis 1353
 symptoms in neuroses 1347
 tables 3803 3904
 Convulsions brain tumors and 1422
 diff diag (Table) 1619
 in epilepsy 1515
 treatment, 1518
 epileptiform in acute glomerulonephritis 2377
 magnesium sulfate injections in dosage
 2379
 in toxemia of pregnancy 2640
 in infancy diff diag (Table) 2780
 treatment 2781
 management 1518
 in periarthritis nodosa, 1028
 therapeutic, 1519
 set for (Fig) 3493
 Cooking effect on food values 656
 Cooley's erythroblastic anemia, 1071
 diff diag (Table) 1060 1087
 Cooperative Clinical Group syphilotherapy 344
 U S Army modification 346
 Copavim in common cold evaluation, 2119
 Copper sulfate 49
 application to eye 1553
 in skin diseases 3118
 Cor bovinum cause (Table) 968
 manifestations (Table) 968
 pulmonary cause (Table) 919 968
 electrocardiogram in (Fig) 822
 manifestations (Table) 908
 Coramine 3871
 in asphyxia neonatorum 2770
 in infancy dosage 2744
 pharmacology 3871
 therapeutics 3871
 Cord bladder 2331
 cystometry in 2249
 spermatic See *Spermatic cord*
 Cryptopia definition 1580
 Corn 3090 3165
 collodion 3118
 diff diag (Table) 3250
 Cornea anatomy 3615
 birth injury etiology (Table) 1571
 symptoms (Table) 1571
 erosion etiology (Table) 1571
 symptoms (Table) 1571
 foreign bodies in 1572
 removal of 1556
 inflammations 1626
 keratinization in vitamin A deficiency 619
 keratomalacia (Table) 1591
 staining by fluorescein 1548
 tattooing 1557
 transplantation 1557
 ulcers 1629
 cauterization in 1557
 iontophoresis in 1550
 massage for 1550
 thermophore for 1549
 Corneal opacities definition 1560
 Cornu cutaneum See *Cutaneous horn*
 Coronary See also *Heart*
 arteries disease with bronchitis electrocar-
 diogram in (Fig) 839
 electrocardiogram in (Fig) 818 826
 829 830 831 832 837 838 844 847
 848 849 850
 function 773
 occlusion See *Coronary occlusion*
 syphilis of 1012
 arteriosclerosis See *Coronary sclerosis*
 arteritis nonsyphilitic, 1013
 syphilitic 1026
 Blood flow 774
 closure See *Coronary occlusion*
 insufficiency acute 89, 983
 diff diag 896
 electrocardiographic diagnosis of 809
 in periarthritis nodosa 1023
 Shock in 933
 in coronary artery syphilis 1012
 diff diag (Table) 892
 electrocardiogram in (Fig) 817
 in hypertension 906
 in hypotension, diff diag (Table) 917

- Coronary insufficiency pain in diff diag (Table) 2898
involvement in peripheral vascular disease (Table) 996
occlusion acute 933
 after treatment 989
 in backward failure 943
 clinical manifestations, 934
 diff diag (Table) 892
 electrocardiographic patterns in 986
 992
 fever = 25 984
 gallop sounds in, 993
 in hypertension 906
 in hypotension diff diag (Table) 917
 indigestion and, 935
 leukocytosis in, 934
 pain = 984
 in periarthritis nodosa 1023
 sedimentation rate in, 984
 shock in 935
 treatment, 987
 drugs in 988
 to be avoided 989
 oxygen therapy in 987
 quinidine in 892 987
 summary 989
 slow 991
 treatment 992
sclerosis 993
 aortic disease predisposing to 972
 thrombosis See *Coronary occlusion*
 veins function 774
 vessels anatomy (Fig) 3545
Corpus albicans 2450
 luteum 2430
 cysts 2560
 in pregnancy 2490 2626
Corrective exercises 3757
Corrigan's disease See *Aortic insufficiency*
Corrosive sublimate description 130
Corset() in back sprain 3070
 liver 1036
Cortical bone, histology 2796
Corticosteroids (Table) 1267
Corticotropic effect (Table) 1154
Corvibacteria effect of sulfonamides on 92
Corynebacterium diphtheriae bacteriology 30
 (Fig) 47
 infections 302
 clinical manifestations 306
 penicillin evaluation 111
 streptomycin in evaluation 111
 boffman u 302
 zero 302
Coryza 2114
 diagnosis 1215
 events in 2117
 treatment 2116 2119
Cosmetic(s) 3133
 dermatitis (Fig) 550
Cottonpox 424 See also *Smallpox*
Cottonseed oil food value 550
Cough in backward failure 943
 in chronic bronchitis, 2169
 chronic in paranasal sinuses 2133
 code prescriptions for 3356
 diff diag (Table) 2050
 in lingual tonsillitis 2152
 in lobar pneumonia, 2173
Cough persistent in bronchiectasis 2060
 plate in infancy indications 2740
 in pertussis 280
 (Fig) 281
 in pulmonary congestion 2086
 sedatives 2029 2052
 treatment symptomatic 2051
 in tuberculous pneumonia 2203
 whoops g 278 See also *Pertussis*
Counterirritant bath technic, 3133
Courvoisier gallbladder in pancreatic cancer
 1943
law 2010
Coutard method of x ray treatment 3797
Covermark in skin lesions 5 03
Cowper's glands anatomy 2398 3633
 cysts 2426
 tuberculosis 2445
 tumors 2445
Cowperitis acute 2469
 chronic 2469
 tuberculous 2470
Cowpox 423
Coxa plana (Fig) 2993
 vara 2925
 (Fig) 2825
 lump and (Table) 2736
Crab louse infestation 3185
Cracked pot sound 3537
Cracks of skin, diff diag (Table) 3218
Cranial nerves anatomy 1471
 injuries 1480
 complicating head injuries 1432
 paralysis 1480
 physiology 1472
Craniopharyngioma, 1177
Craniosacral system 4
Craniotabes diff diag (Table) 2774
Craniotomy exploratory 1429
 indications for 3993
Cranium bifidum 1409
 (Fig) 1408
 in infancy examination 2731
 size 3503
Cream composition (Table) 638
 hand chemistry 3142
 use 3136
Creatine in blood (Table) 5
Creatinuria diff diag (Table) 3677
Crédé method of ophthalmia prophylaxis 1621
Creeping eruption, 3193
 (Fig) 3193
 in hookworm disease 1905
Cremasteric reflex 3555
Cresote therapy in tuberculosis 267
Crepitus in osteo-arthritis 2853
 in tenosynovitis 2901
Cresatin 3307
Cresol as disinfectant 3116
 poisoning clinical manifestations (Table)
 767
 diagnosis (Table) 757
 occupations susceptible to (Table) 757
 treatment (Table) 757
Cretinism 1191
 diff diag (Table) 1333 2729
 (Fig) 1192
 gut disturbances and (Table) 2736
 ossification disturbances in diff diag (Table)
 2738

- Crissaline in rheumatoid arthritis 2922
 Crissus Addisonian 1278
 tabetic 1465
 thyrotoxic 1207
 Crispispira taxonomic key to 329
 Crooke's change 1269
 Cross-eye See *Strabismus*
 Croton oil 1829
 Croup 2161
 spasmodic diff diag (Table) 2732
 Crush fractures 3009
 treatment (Fig) 3011
 Watson-Jones reduction in (Fig) 3010
 syndrome renal complications 2372
 Crust definition 3104
 Cryotherapy in amputations 3785
 in inoperable carcinoma 577
 local 3785
 in peripheral vascular disease 397
 systemic 3786
 (Table) 3783
 Crypt abscess 2380
 Cryptitis 1912
 Cryptococcosis 497
 diff diag (Table) 443
 of lungs (Fig) 487
 Cryptococcus neoformans 497
 Cryptogenic fever diff diag (Table) 26
 Cryptorchidism 2423
 diagram (Fig) 242
 surgery in optimal time for 2425
 Crystal violet in skin diseases 3118
 Culex as vector (Table) 42
 Cullen's sign in tubal rupture 2659
 Culter Power Wilder test 1276
 Culture(s) in gonorrheal vaginitis 2587
 media bacterial growth and 140
 Cupress in skin diseases 3118
 Curare 3888
 in cerebral palsy 2850 3890
 in convulsive shock therapy 3890
 pharmacology 3889
 in poliomyelitis 461 2931
 therapeutics 3890
 Curettage in removal of warts 3291
 of uterus 2563
 Cushing's disease 1150
 diets in 1165
 diff diag (Table) 1163
 (Fig) 1161
 hypercalcemia in diff diag (Table) 723
 laboratory data 1162
 treatment 1164
 testosterone in discussion 2406
 Cutaneous actinomycosis 490
 diseases 3099
 nail changes in 3153
 horn 3217
 diff diag (Table) 3210 3214 3266
 of genitals diff diag (Table) 3274
 pigmentation in diff diag (Table) 3164
 manifestations of endocrinopathies 3038
 of infection 3 46
 of metabolic disorders 3235
 of vitamin deficiencies 3233
 reactions types 3101
 Cuticle remover 3142
 softener 3142
 Cutis hyperelastica 3149
 (Fig) 3150
 Cutis marmorata 3172
 verticis gyrata 3150
 diff diag (Table) 3054
 (Fig) 3159
 Cyanide mercuric, description 131
 Cyanogen poisoning clinical manifestations
 (Table) 743
 diagnosis (Table) 743
 occupations susceptible in (Table) 743
 treatment (Table) 743
 Cyanosis 784 962
 classification in congenital cardiac disease
 962
 in lobar pneumonia, 2174
 Cyclitis See *Iridocyclitis*
 Cycloclaflys 1538
 Cyclopropane anesthesia in major surgery 4099
 in tuberculosis 272
 Cyclops 1409 1561
 Cyclothymia, definition 1801
 Cylindroma 3683
 in backward failure 914
 in plumbism 763
 Cyst(s) bone swelling in diff diag (Table)
 2955
 dentigerous 2067
 dermatoses characterized by diff diag
 (Table) 3210
 of eye clinical manifestations (Table) 1566
 of eyelid margin rupture 1553
 mesenteric and omental 1923
 of oropharynx 1712, (Fig) 1715
 (Table) 1714
 of ovary See *Ovary, cysts of*
 pidioid congenital 1911
 sebaceous 3208
 diff diag (Table) 3211
 excision technique 3935
 of face treatment technique 3208
 of spleen 1132
 synovial 3208
 diff diag (Table) 3211
 vulvovaginal 2547
 Cystadenoma of ovary (Fig) 2368
 pseudomucinous 2567
 serous 2567
 Cysteine 10 1
 Cystic disease of lung 2064
 lymphangioma 266
 Cysticercus myocarditis from 1015
 Cystinuria 2311
 Cystitis chemotherapy in 2315
 cystics 2315
 (Fig) 2314
 pathology 2313
 diagnosis 2314
 gangrenous 2313
 interstitial 2313
 pathology 2313
 nodular 2313
 nonspecific 2312
 atropine-like drugs in prescription 2313
 pathology 2313
 silver in dosage (Table) 155
 tyrothricin in 108
 Cystocele 2337
 (Fig) 2336
 Cystograms of bladder (Fig) 2337
 normal (Fig) 2247
 Cystography 2234

- Cystography indications 2245
in renal tuberculosis 2350
- Cystometry 2248
in cord bladder 2248
indications 2244
- Cystoscope Brown Buerger (Fig) 2248
- Cystoscopy 2248
indication 2244
in infancy indications for 2735
in renal tuberculosis 2350
therapeutic uses 2249
uroolithiasis 2317
- Cystostomy indications for 3993
suprapubic 2263
(Fig) 3956
technic 3958
- Cystotomy indications for 3993
suprapubic (Fig) 3956
- Cytoplasm 3
bacterial 138
- D**
- DACRYADENITIS 1613
- Dacryocystectomy 1557
indications for 3994
- Dacryocystitis acute 1614
chronic 1614
tyrothricin in 106
- Dacryocystorhinostomy 1557
- Dacryocystotomy indications for 3993
- Dairy products composition of (Table) 638
- Dakin's solution 3117
- D le reversal 3883
- Dalrymple's sign in hyperthyroidism 1203
- Dandruff 8430
- Darier's disease See *Acratosis follicularis*
ointment prescription 3129
- Dark adaptation in vitamin A deficiency 619
- Room examinations 3589
- Darkfield examination in infancy indications 2740
microscopy 45 336
- Darling's disease See *Histoplasmosis*
- Daukaia See *Leishmaniasis*
- DDT 8118
in pediculosis capitis 3182
in scabies 3181
in typhus 374
- Deaf mutism 2045
- Deafness diff diag (Table) 2019
middle ear 2162
in otosclerosis 2095
pregnancy and 2648
- Deamination of protein 592
- Débridement technic (Figs) 3980
- Decalcification diff diag 2805
(Table) 2806
- Decholin in infancy dosage in circulation time 2745
- Decubitus disturbances of diff diag (Table) 3194
esophagitis 1737
ulcers 3167
diff diag (Table) 3214 3218 3296 3368
- Deer fly fever See *Tularæmia*
- Deferentitis See *Vas deferens*
- Degeneration of thy 9
(Fig) 11
perineurymatous definition 7
(Fig) 8
- Degeneration pigmentary definition, 9
progressive lenticular 1418 1977
- Degenerative joint disease See *Osteo-arthritis*
- Dehydration 11 704
acidosis in diff diag (Table) 721
diet 684
fever in 24
diff diag (Table) 718
fontanelles in diff diag (Table) 2729
hyperproteinemia in diff diag (Table) 35
postoperative prevention 4003
treatment 4007 4012
- Dehydrocholic acid dosage (Table) 1048 1990
- Déjà vu, definition 1299
- Dejerne-Roussy thalamic syndrome 1477
- De-leading technic of 765
- DeLee's operation telescope (Fig) 2877
portable sterilizer (Fig) 2677
- Delhi bod See *Leishmaniasis tropical*
- Delirium definition 1293
in sulfonamide therapy 94
tremens 1384
- Delivery breech presentation, 2704
cesarean section in, 2696
face presentation 2703
(Fig) 2700 2712
forceps 2694
technic 2695
fractures during 2777
home versus hospital 2676
normal, 2696
preparation of patient, 2706
technic, with caudal anesthesia 2709
- Delusions definition 1296
- Dementia definition 1992
praecox 1364 See also *Schizophrenia*
- Demerol 3863
in asthma dosage 2103
in dislocation dosage 2964
dosage pre-anesthetic 5915
effect on muscle 3889
in fracture (Table) 2984
in infancy dosage 2743 2745
and morphine comparison, 3863
in obstetrics dosage 2678
in peripheral vascular disease dosage 908
pharmacology 3863
in renal colic 230
therapeutics 3864
in thromboangitis obliterans 1031
- Dengue fever 406
diff diag (Table) 29 173 174
leukopenia in 407
no quito as vector in (Table) 42
rash in diff diag (Table) 2789
symptoms other than rash in diff diag (Table) 2790
- Dengue like fevers 408
fly as vector in (Table) 42
- Dennis Brown splint in talipes 2831
- Dental abscess 1704
(Fig) 1696
anesthesia 1663
calculi 1699
(Fig) 1699
caries 1663 1702
fillings 1663
prophylaxis 1649
prostheses 1667

- Dental x rays 1817
(Fig) 1617 1639 1649
- Dentifrices 1661
- Dentigerous cysts 1714 2067
- Dentist, indication for consultation 3635
- Dento-alveolar abscess 1704
(Fig) 1696
- Denture cheilosis 1690
- Deodorant(s) armpit prescriptions 3112
bath 3133
foot prescription 3143
wet dressing technic 3135
- Depersonalization definition 1299
- Depigmentation of skin diff diag (Table) 3104
- Depilatories chemical 3140
- Depressed fractures of skull 1451
- Depression definition 1301
phase in manic depressive insanity 1369
- De Quervain's disease 2901
- Derail See *Thiouracil*
- Dermac's disease See *Adiposa dolorosa*
- Dermacentor andersoni 3192
as vector (Table) 42
- Dermal creeping myiasis 3103
- Dermatitis actinic acute 3174
diff diag (Table) 3167
acute treatment 3307
arsenical (Fig) 123
artefacts 3432
(Fig) 3 33
atopic 3312 See also *Atopic dermatitis*
clothing (Fig) 560
congelation 3173
contact 340 See also *Contact dermatitis*
cosmetic (Fig) 560
diaper (Fig) 3160
drug See *Dermatitis medicamentosa*
due to heat 3100
eczematous 3300 See also *Contact dermatitis*
exfoliative 3383
diff diag (Table) 175 3162
(Fig) 3383
nail changes in 3156
neonatorum 3 32
diff diag (Table) 422
rash in diff diag (Table) 3390
- factitia 3232
(Fig) 3233
- food 651
- hemostatic 3371
diff diag (Table) 3154 3162 3214 3378
- herpetiformis 3371
diff diag (Table) 422 3154 3250 3316
3368
ophthalmic manifestations 1563
oral manifestations 1667
of pregnancy (Fig) 3241
rash in diff diag (Table) 3230
- infectious eczematoid 3235
- lipstick (Fig) 650
- medicamentosa, 3335 3313 See also *Drug eruptions*
allergen in 553
diff diag (Table) 412 422 3162 3267
3282 3336 3368 3409
(Fig) 550 3332
oral manifestations 1670
rash in diff diag (Table) 123
symptoms other than rash in diff diag
(Table) 2791
- Dermatitis nupkin 3163
(Fig) 3160
secondary syphilis vs., 3164
occupational 551
papularis capitis 3255
diff diag (Table) 3241
papulosa nigra diff diag (Table) 3360
pellagrous 624
(Fig) 3237
perfume diff diag (Table) 3163
pigmentation in diff diag (Table) 3155
plant prevention 3333
radium aloe vera in 3113
seborrheal See *Seborrheal dermatitis*
solar chronic 3175
diff diag (Table) 422
pigmentation in diff diag (Table) 3156
sulfonamide 95
(Fig) 90
venenata 3330 See also *Contact dermatitis*
- Dermatologist indications for consultation 3635
- Dermatology 3097
terminology in 3099
- Dermatomycoses deep 3309
treatment 3316
diff diag (Table) 3210 3218 3267 3334
3368 3378
superficial 3293
treatment 3307
systemic cutaneous manifestations (Table) 3246
methods of diagnosis (Table) 3246
- Dermatomyositis 3373
diff diag (Table) 192
(Fig) 3373
- Dermatophobia 3234
- Dermatophytids 3298
diff diag (Table) 422 3206
erysipelatous 169 3300
(Fig) 3291
rash in diff diag (Table) 3200
- Dermatophytoses complications 3300
deep 3309
treatment 3316
of genitals diff diag (Table) 3274
pedis 3298
phenylmercuric nitrate in, 3125
superficial 3293
cutaneous manifestation (Table) 3246
methods of diagnosis (Table) 3246
treatment 3307
thymol in prescription 3125
- Dermatoses acneiform 3360
actinic 3174
of aged, common diff diag (Table) 3214
alopecia caused by 3441
of arms and legs diff diag (Table) 3378
ailas 3105
of axilla diff diag (Table) 32 3
of beard diff diag (Table) 3137
characterized by nodules cysts and tumors
diff diag (Table) 3210
of childhood diff diag (Table) 3360
in chronic glomerulonephritis 2382
descriptive 334
diabetes mellitus and 1249
diff diag (Table) 3110
of ear diff diag (Table) 2113
on inopula in diff diag (Table) 512

- Dermatoses of feet diff diag (Table) 3268
 of feet, diff diag (Table) 3296
 of genitala, diff diag (Table) 290
 of hands, diff diag (Table) 3236
 incidence, 3105
 of fancy diff diag (Table) 3146
 local, vesicular bullous and pustular diff
 diag (Table) 3334
 malignancy in, caused by chronic irritation
 3212
 of neck, diff diag (Table) 3254
 neurogenic, 37
 classification 3229
 of nose, diff diag (Table) 3264
 oral manifestations 1667
 painful diff diag (Table) 3250
 papular capillitis diff diag (Table) 3334
 papulosa nigra, 3150
 diff diag (Table) 3154 3267
 of perineum diff diag (Table) 3290
 petechial, diff diag (Table) 3329
 pigmented diff diag (Table) 3154
 precancerous 371 3209
 of pregnancy 2649
 psychogenic, 3231
 in rheumatic fever 190
 scal diff diag (Table) 3392
 of scalp, diff diag (Table) 333
 staphylococci 123
 of torso diff diag (Table) 3363
 Dermatitis sicca 329
 Dermographism 3331
 Dermoid cyst of mediastinum (Fig) 2082
 of neck, diff diag (Table) 334
 of ovary 236
 of eye, definition, 1561
 (Table) 1566
 Dermolipoma of eye definition 1 61
 Descriptive dermatoses, 3300
 Demex, 3307
 in mycosis 3131
 Desensitization in allergy 363
 indications for 363
 serum, technique 363
 Desert fever 499 See also *Coccidioidomycosis*
 Desiccation, 11704 See also *Dehydration*
 Desitin, 3117
 Desoxy corticosterone in Addison's disease dis-
 cussion 1277
 edema 715
 fluid balance and 704
 pharmacology 1267
 (Table) 1267
 Deserts food value of 633
 in infant feeding 2755
 Detumescence 2102
 Deuterium oxide 557
 Deviations oculi 1529
 Devil grip See *Flexuosa epidemia*
 Dieldrin See *Amphiprasi sulfide*
 Dextrin in loose preparations in infant feeding 2753
 Dextrocardia 361
 electrocardiographic diagnosis of 309
 Dextrose as diuretic dosage 2 60
 in infancy dosage in tolerance test, 2745
 oxidation of 520
 therapeutics 3824
 tolerance test in sprue, 1084
 Dhoobie itch See *Tinea cruris*
 Diabetes, bronze 1976
 bronze pigmentation in, 3
 decipiens 1248
 innocens, 1062
 insipidus, 1180
 basal metabolism in diff diag (Table) 720
 estrogen therapy in, 2517
 in Frohlich's syndrome 1169
 hypernatremia in, diff diag (Table) 730
 treatment, 1183
 xanthoma disseminatum in, 5244
 mellitus, 1246
 acidosis in, diff diag (Table) 721
 treatment, 1257
 alluvia 1246
 arteriosclerotic change in (Table) 950
 blood tudes in, 1250
 clinical manifestations, 1248
 coma, treatment 1257
 diagnosis, 1201
 diet in, 1253
 estrogen therapy in, 2516
 glycosuria in, 1249
 hyperthyroidism and, 1246
 hypochloremia in, diff diag (Table) 732
 hypostremia in, diff diag (Table) 729
 infection and 1259
 insulin in, 1255
 management, laboratory controls in (Ta-
 ble) 1254
 ophthalmic manifestations 1249 1593
 oral manifestations, 1274
 pathogenesis 1246
 peripheral vascular disease and, 1261
 pernicious anemia and, 1080
 posture Benedict test in, diff diag (Ta-
 ble) 3677
 pregnancy and, 2673
 renal complications 2372
 sugar tolerance test in 120
 surgery and, 1209 3399
 treatment, 122
 uncomplicated treatment 1255
 renal, 1262
 tuberculosis and 1260
 Diabetic acidosis 1251
 back in, 934
 clinical, electrocardiographic changes in, 808
 (Fig) 833
 fever diff diag (Table) 718
 treatment 1207
 nephrosis 1249
 edema in, 103
 Diabetic acid in oral tests for 3650
 Diagnosis in thiods See *Laboratory examinations*
 by present symptoms See pp 4153-4169
 Dial, dosage (Table) 3937
 4,4 diamino-*N*-substituted methionate in tropical
 malaria dosage 330
 Diminution of diphenylhydantoin therapy in tubercu-
 losis, 267
 Dipthermatitis 3163 (Fig) 3160
 Diaphoretic water 546
 Diaphragm ventrator 1804
 clinical manifestations (Table) 2047
 filter 2004
 paralysis 2004
 spasm, 2004
 vaginal, as contraceptive, 2303

- Diaphragmatic hernia** 3033
 clinical manifestations (Table) 2047
- Diarrhea** bloody in azotemia 2278
 diff diag (Table) 1840
 epidemic of infancy diff diag (Table) 2782
 of newborn 2786
 gastrogenous 1842
 in hyperthyroidism 1203
 in infancy 2781
 diff diag (Table) 278°
 treatment 2781
 intractable in Addison's disease 1273
 parenteral in newborn diff diag (Table) 2782
 in pericolic abscesses 1033
 prescriptions for 3856
 thyrogenic 1839
 treatment symptomatic 1842
 in ulcerative colitis 1856
- Diary history** 3474
- Diazene** in leprosy 277
 in tuberculosis 207
- Diastase** in pancreatic disorders 1936
- Diastolic murmur** description (Table) 973
 pre sure decreased diff diag (Table) 918
 increased diff diag (Table) 918
- Diathermy** 3788
 (Fig) 3788
 indications 3788
 medical for eye 1540
 surgical for eye 1540
 temperature in 24
- Dichloramine T** in wound dressing 3117
- Dichlorethyl sulfide** action 750
- Dichloro-diphenyl dichlorethane** See *D D T*
- Dick test** negative (Fig) 58
 positive (Fig) 68
 technic 183
- Dicoumarol** 1041
 dosage 1051
 in infancy dosage 274°
 vs heparin 1053
 in thrombosis dosage 1125
 toxicity 1052
- Dicrotism** diff diag (Table) 3581
- Diencephalic autonomic seizure** 1400
- Dientamoeba fragilis** differential character
 1 tics (Table) 3733
 differentiation (Table) 528
- Diet(s)** acid ash 680
 in acne vulgaris 3366
 in Addison's disease 1276
 in aged 664
 alkaline ash 531
 American 633
 in backward failure 947 948
 bland gastric 666
 low residue 668
 in blood diseases 1052
 causing arteriosclerosis 978
 in celiac diseases 1938
 in childhood 2756
 in circulatory disturbances 831
 after colon operations 689
 in colonic stoma 690
 in common cold 303
 in coronary occlusion 690
 in Cushing's syndrome, 1184
 dehydration 664
 in diabetes mellitus 1253
- Diet(s) dry** in premenstrual tension, 2486
 elimination 633
 in allergy 562
 in endocrinopathies 1145 1150
 in epilepsy 1517
 in gallbladder disease 1089
 in gastritis 1812
 gasiro-intestinal flora and 149
 Getson-Sauerbruch Hermannsdorfer in to
 berculosis 269
 in glomerulo-nephritis 2386
 in hepatitis 1967
 high-calcium 678
 high-calory 671
 high carbohydrate high-calory in alcohol
 ism 3853
 low fat 672
 low protein 673
 high iron high vitamin 682
 type 1042
 high protein low fat 674
 high roughage 669
 in hyperinsulinism 1243
 in hypertension 914 915
 in infancy 2756
 in infectious diseases 71
 jejunal feeding 687
 Karel 670
 ketogenic, 675
 in lactation 663
 liquid 663
 low-calcium 679
 low-calory 669
 in hypertension 912
 indications for 669
 in prostatic hypertrophy 2448
 restricted fluid 670
 low fat in seborrhea, 3451
 low-oxalate 830
 low protein low salt 675
 low purine 677
 low residue 668
 in Ménière's disease 1480
 Meulengracht 667
 in nontropical sprue 1939
 normal 668
 variants in 662
 in obesity 697
 in peptic ulcer 666 1791
 in pernicious anemia 1089
 in portal cirrhosis 1971
 postoperative after cholecystectomy 684
 in duodenal lesions 686
 in stomach lesions 686
 in pregnancy 663 2629
 preoperative in colon diseases 688
 in duodenal lesions 685
 in gastric retention 684
 in stomach lesions 685
 purine low in gout 2875
 reducing 637
 requirements for normal adult 660
 in rheumatic fever 194
 in rheumatoid arthritis 2910
 in Simmonds disease 1173
 Sippy 666
 for surgical patient 684
 in syphilis 319
 in tetany 726
 in toxemia of pregnancy 2641

- Diet(s) in toxic hepatitis 1967
 in tuberculosis 269
 in typhoid fever 236
 in urinary calculi 2320
 in uropathies 2255
- Dietary allowances recommended (Table) 659
 deficiency hypocalcemia in diff diag (Table) 724
- Dietetic acidosis diff diag (Table) 721
 Diethylstilbestrol dosage (Table) 2515
- Diet's crisis 2295
 diff diag 2296
 faulty posture and 3053
- Dietotherapy 638
 starvation and, 584
- Dieulafoy's erosion 1763
- Digestion, effect of water on 587
 mechanism 1820
 normal variations in blood during 1041
 salivary 1653
- Digestive disorders anemia in 1083
 constipation in diff diag (Table) 1832
 due to oral lesions 1630
 epigastric pain in, diff diag (Table) 1788
 hiccup in diff diag (Table) 1033
 of infancy list 2759
 involuntary nervous system and (Table) 1397
 pain in, left upper quadrant diff diag (Table) 1942
 in right upper quadrant diff diag (Table) 1949
 swellings in diff diag (Table) 1957
 tarry stools in diff diag (Table) 1843
 symptoms diff diag 1747
 system contrast roentgenography in 3742
 diagram 3561
 effect of lead on, 763
 foreign bodies in 3985
 (Fig) 3995
 in typhoid fever 237
- Digital block, 3919
 (Fig) 3919
- Digitalis 854
 absorption 855
 bioassay of 855
 in cardiac dilatation 871
 cardiac tonus and 772
 in circulatory disturbances 834
 in complete heart block 880
 in congestive failure 951
 coupling 860
 in diphtheritic myocarditis 1013
 dosage 859
 effects cardiac 772 856 3388
 extracardiac 857
 electrocardiographic changes from 808 857
 excret on 855
 in infancy dosage 860 2744
 intoxication 860
 in right heart failure 944
 in obesity 698
 ophthalmic manifestations 1596
 in permanent auricular fibrillation 886
 pharmacology 856
 poisoning 860
 electrocardiogram in (Fig) 847 848
 preparations 854
 purpura, 854
 in rheumatic fever 196
- Digitalis, therapeutics of 858
 in tsutsugamushi fever 382
 in vagal stimulation, 883
- Digitate wart 3291
- Digoxin, 855
 in congestive failure dose 951
 in coronary insufficiency 896
- Dihydroxycholesterol in parathyroid deficiency 621
 in pemphigus dosage 3408
 in scleroderma 3429
 in tetany 1233
- Duodotytosis 1188
- Dilantin 3844
 dosage (Table) 3837
 in epilepsy 1517
 gingivitis 1670
 (Fig) 1671
 pharmacology 3845
 skin reactions due to 3339 3845
 therapeutics 3845
 toxicology 3845
- Dilaudid in dislocation 2964
 dosage (Table) 3854
 in fracture (Table) 2984
 in infancy dosage 2745
 as pre anesthetic 3913
 shock prevention and 237
- Dilester in leprosy 277
- Dilution test urinary 2242
- Diazepam evaluation 3127
- Dimercaptol 767
- Dinitrobenzol poisoning clinical manifestations (Table) 757
 diagnosis (Table) 757
 fever due to 24
 occupations susceptible to (Table) 757
 treatment (Table) 757
- Dinitrophenol poisoning clinical manifestations (Table) 754
 diagnosis (Table) 754
 occupations susceptible to (Table) 754
 treatment (Table) 754
- Dioprost in fluoroscopy 800
 in infancy dosage for intravenous urography 2745
- Dione, dosage (Table) 3854
- Diothane 3915
- Diphosgene as lung irritant 745
- Diphtheria 302
 animal inoculation in (Table) 62
 antitoxin technique of administration 310
 carriers 305
 clinical manifestations 306
 complications 307
 culture in (Table) 54
 diagnosis 308
 by smear in (Table) 60
 diff diag 309
 epidemiology 304
 fever in diff diag (Table) 1006
 immunity to 305
 immunization in, active 309
 passive 310
 laryngeal 307
 diff diag (Table) 2732
 methods of diagnosis (Table) 3246
 myocardial involvement in 308 1013
 nasal, 307
 nasopharyngeal 306

- Diphtheria** *ophthalmic manifestations* 1608
oral manifestations 1670
pathology 305
penicillin in 311
of penis 2453
quarantine data on (Table) 66
Schick test (Fig) 302
 technic 304
septic 307
sequels to 307
shock in 933
skin 307
spinal cord involvement *diff diag* (Table) 1481
sulfonamides in, 311
test in (Table) 59 305
throat in *diff diag* (Table) 3600
tonsillar 306
 (Fig) 303
toxin 303
 evaluation 78
 mechanism 77
 standardization 304
 antitoxin evaluation 78
toxoid administration (Table) 80
 evaluation 78
 in leprosy 277
 tetanus toxoid and dosage 227
 evaluation 78
 and whooping cough vaccine com
 bined evaluation 78
 treatment 309
 uvular (Fig) 303
 virulence mechanism 145
Diphtheritic conjunctivitis 1601
 infections *circulatory disturbances in* (Table) 934
 myocarditis 1013
Diphyllobothrium latum *infestation*, 1899
 morphology (Table) 3732
 ova (Fig) 1894
 in stool (Fig) 1806 3731
Diplegia cerebral 1455
 spastic after asphyxia neonatorum 2768
 (Fig) 2949
Diplococcus crassus *properties* (Table) 208
Diplopia *diff diag* (Table) 1628
 tests 1829
Dips mania 3351
Direct pain 1474
Disaccharides 588
Discharge aural *diff diag* (Table) 2150
 nasal *diff diag* (Table) 2100
 urethral *diff diag* (Table) 2340
 vaginal *diff diag* (Table) 2385
Disinfectants in infectious diseases 68
 of skin 3112
Dr. k choked See *Papilledema*
Dislocation(s) 2964 See also under names of
 bones
 ankle 2981
 birth deformity in *diff diag* (Table) 2954
 buttonhole 2977
 treatment (Table) 2971
 of elbow 2975
 (Fig) 2975
 of extremity lower 2977
 upper 2971
 of finger 2977
 treatment (Table) 2971
 of hip 2978
 of jaw *clinical manifestations* (Table) 2985
 treatment (Table) 2965
 joint *diff diag* (Table) 2810
 of knee 2979
 (Fig) 2980
 of leg *treatment* (Table) 2977
 of pelvis 2970
 of shoulder 2971
 (Figs) 2972
 recurrent, 2974
 reduction by Kocher's maneuver 2973
 (Fig) 2973
 of spine 2966
 clinical manifestations (Table) 2965
 treatment (Table) 2965
 treatment 2964
 of wrist 2976
 treatment (Table) 2971
Dislocation fracture 2983
Disorientation *definition* 1208
Disseminated neurodermatitis 3343
 diff diag (Table) 3267
 sclerosis 1504
Dissociation *definition* 1499
Distichiasis *definition*, 1561
 treatment 1564
Distomasis hemic 537 See also *Schistosomiasis*
 hepatic 1992
 jaundice in *diff diag* (Table) 1954
 intestinal 1898
 geographical distribution 1898
 pulmonary 2213
Distractability *definition*, 1296
Diuretics 2237
 acidifying ammonia as 614
 in backward failure 944
 classification 2258
 in congestive failure 949
 in coronary occlusion, *dosage* 988
 list 3897
 mercurial drugs as 100 2261
 in obesity 698
 in portal cirrhosis 1971
 potassium salts as 601 2259
 urea as 694 2259
 water as 687
 xanthines as 2260
Diuretin *dosage* 2261
Diver's paralysis 1501
Diverticula duodenal 1813
 Meckel's 1864
 (Fig) 1865
Diverticulitis 1863
Diverticulosis 1868
 (Fig) 1869
Dizziness *brain tumors and* 1421
 diff diag (Table) 2920
Dobell's solution, 1661
Dog bites *treatment* 2969
 reaction morphine 3353
Dolichocephalus *diff diag* (Table) 2774
Donath Landsteiner reaction in paroxysmal hemoglobinuria, 1075
Donovan bodies in granuloma inguinale 475
 2393
 (Fig) 475
Dorothy Reed cell in Hodgkin's disease 1133
Dorsal spine dislocation, *treatment* (Table) 2965
 fracture 3003

- Doryl dosage (Table) 3374
 in peripheral vascular disease 993
 Double vision diff diag (Table) 1593
 tests 1529
 in trochlear neuritis 1647
 Double barreled colostomy 1836
 Douches vaginal (Table) 2500
 Douching in contraception 2506
 Dover's powder dosage (Table) 3354
 Dracontiasis 3328
 diff d ■ (Table) 3378
 Dracunculus medinensis extraction (Fig) 3327
 life cycle 3328
 Drainage of wound procedures 3393
 Dream states definition, 1294
 Drepanocytic anemia, 1065
 Dressings disposal of ■
 eye application 1555
 room in office 4045
 (Fig) 4044
 wet 3184
 Drowsiness prescription 3118
 Dried milk in infant feeding 2754
 Drinker respirator 2,70
 Drop method intravenous infusion by 3775
 Dropsy epidemic 1583
 Drowsiness diff diag (Table) 1908
 treatment 1907
 Drug(s) See also under treatment for specific conditions
 abortifacient 2651
 abortion, 3807
 act on 3811
 intermediate metabolism and 3809
 on muscle 3387
 lit 3885
 addiction, 1361 3815
 administration 3806
 route for (Table) 3807
 adrenergic 3876
 allergy tests for 560
 alopecia 3443
 diff diag (Table) 3499
 antagonism 3811
 atopy 349
 (Fig) 3814
 anthelmintic, 1894
 in childhood 2742
 cholesterol 1775 3373
 concentration 3910
 dermatitis See *Dermatitis medicamentosa*
 diminution of hearing due to diff diag
 (Table) 4019
 distribution 3808
 dosage 3406
 electrocardiographic change due to 303
 eruptions 3335
 diagnosis 3340
 diff diag (Table) 3346 3398
 ■ ognois 3341
 treatment 3341
 excitation 3809
 fastness 3812
 fever 24
 diff d ■ (Table) 718
 in sulfonamide therapy 94
 habitation 3815 See also individual drugs
 hematuria due to diff diag (Table) 2306
 idiosyncrasy 3813
 systemic, 3813
 Drug(s) insomnia due to diff diag (Table)
 1305
 intoxication fever in 24
 for local and topical effects list 3892
 nonofficial 3900
 for office list 3749
 official 3799
 overdosage vertigo due to diff diag (Ta-
 ble) 2020
 photosensitivity due to 3177
 placental transfer of 3810
 poisoning 3816
 coma in diff diag (Table) 1294
 treatment, 3817
 unconsciousness in diff diag (Table) 1294
 pruritus diff diag (Table) 3170
 in psychiatry 1322
 sensitivity 3812
 shock due to 335
 skin reactions caused by list 3339
 specific affinity 3803
 storage in body 3809
 syncope 324
 synergism 3811
 with systemic effects on invading organisms
 list 3896
 therapy in allergy 364
 in dysmenorrhea 2562
 in female reproductive system 2509
 in gastritis acute 1810
 in hypertension 912
 in manic depressive insanity 1371
 in pertussis 384
 in respiratory disturbances 2029
 in skin diseases 3112
 in stomatitis 1695 1698
 in tuberculosis, 271
 tolerance 3912
 toxicology 3816
 transfer in lactation 3810
 Drusen bodies (Table) 1691
 Dry seborrhea 3430
 Duboscq colorimeter (Fig) 3714
 Ducrey antigen skin test 239
 bacillus 288
 Duct(s) bile See *Bile ducts*
 ejaculatory anatomy 2398
 Ductus arteriosus patent 257
 clinical manifestations (Table) 964
 diff diag (Table) 868
 (Fig) 953
 ligation of in backward failure 247
 indications 3995
 Dugas test 2973
 Dühring's disease See *Dermatitis herpeti-*
 formis
 Duke's disease See *Fourth disease*
 method of bleeding time determination, 3706
 Dulpin reaction 1263
 Dumdum fever 534 See also *Leishmaniasis*
 Dunham's fan 261
 Dunn's colorimeter 3639
 (Fig) 224
 Duodenitis 1813
 Duodenorrhaphy 1758
 Duodenum anatomy 3562
 bacteriology 1743
 diverticula 1813
 drainage 175
 examination special methods 1743

- Duodenum fluid examination** 3726
 in infancy 2739
 normal 3726
ileus 1803
 faulty posture and 3058
lavage 1752
 in gallbladder disease 1989
lesions of postoperative diet in 686
 preoperative diet in 685
obstruction 1804
operations for 1758
physiology 1743
treatment special methods 1749
ulcer 1780 See also *Peptic ulcer*
 electrocardiographic changes in 308
 (Fig.) 836
- Duplicit theory of vision** 1832
Dupuytren contracture 2897
 (Fig.) 2897
- Dural defects fibrin film in** 33
Duroziez sign 970
- Dwarfism** diff diag (Table) 693
 ossification disturbances in diff diag (Table) 2798
 pituitary 1164
 renal 1229
 diff diag (Table) 2879
 testosterone in 2408
 treatment 692
- Dyes aniline carcinogenic** 3215
 carcinogenic 3215
 hair chemicals in 2141
 indicator used in urine tests 3669
- Dyschondroplasia** diff diag (Table) 2798
 2878
- Dyscoria** definition 1561
- Dysentery amebic** 593 See also *Amoebiasis*
 diff diag (Table) 240
 of newborn diff diag (Table) 2782
 quarantine data (Table) 66
bacillary 243
 clinical manifestations 244
 diagnosis 243
 diff diag (Table) 240
 of newborn diff diag (Table) 2782
 prevention 246
 prognosis 246
 quarantine data (Table) 66
 serologic test in (Table) 60
 skin test in (Table) 60
 streptomycin in 247
 treatment, serum 247
 symptomatic 246
 conjunctivitis 1622
 culture (Table) 64
 fulminating 245
- Dysgerminoma of ovary** 2573
 (Fig.) 2572
- Dyskerato** = definition 3101
- Dyskine in biliary** 2007
- Dysmenorrhea androgen therapy in, dosage** 2407
 diff diag (Table) 2501
 faulty posture and 3058
 pharmacotherapy in 2562
 progesterone in, dosage 2510
 treatment symptomatic 2461
- Dysovulation** 2523
- Dyspareunia, definition** 1504
 diff diag (Table) 2491
- Dyspepsia** diff diag (Table) 1770
 nervous definition 1769
- Dysphagia in aneurysm** 1029
 diff diag (Table) 1722
 larynx 260
- Dysphonia** 2100
- Dyspituitarism decreased growth of** diff diag (Table) 2762
 diff diag (Table) 693 695
- Dysplasia** definition 7
- Dyspnea in backward failure** 912
 diff diag (Table) 2016
 in hypertension 906
 in lobar pneumonia 2173
- Dystocia** 2696
- Dystrophy adiposogenital** 1166
 muscular See *Muscular dystrophy*
- Dysuria** diff diag (Table) 2526
- Ein anomalous congenital** (Table) 2043
 visible diff diag (Table) 2608
 atresia (Fig.) 2044
 dermatoses diff diag (Table) 2113
 discharge from diff diag (Table) 2159
 drum anatomy 2610
 examination 2611
 (Fig.) 2142
 paracentesis 2037
 perforation diff diag (Table) 2603
 retraction diff diag (Table) 2608
 examination 2609
 foreign bodies in 2934
 diff diag (Table) 2603
 furunculosis of 2111
 herpes zoster of 2112
 diff diag (Table) 2608
 in infancy examination, 2791
 infections 2141
 injuries mechanical manifestations (Table) 2047
 irrigation, 2029
 operations on 2037
 pain diff diag (Table) 2132 2143
 sectional view (Fig.) 2610
- Eastern encephalomyelitis in infants** 452
- Eberthella typhi** 223
 infectious cutaneous manifestations (Table) 2246
 method of diagnosis (Table) 2240
 properties (Table) 226
- Echolus** 2509
- Echymosis** definition 2104
 treatment 2964
- ECG** See *Electrocardiogram*
- Echinococcus** 1902
- Echinococcus cyst of bladder** 2551
 jaundice in diff diag (Table) 1834
 of kidney 2351
 of liver 1963
 (Fig.) 1901
 granuloma geographical distribution 1983
 life cycle 1983
 serologic test in (Table) 69
 skin test in (Table) 69
- Echinostoma locantius** 1829
- Echolalia** definition 1509
- Eclampsia** 2640
- Economia disease** 441 See also *Encephalitis epidemica*

- Fostay definition 1301
 Ecthyma, 3252
 diff diag 3252
 pigmentation in diff diag (Table) 3154
 Fetodermal defect 3150
 diff diag (Table) 3146 3254
 -ectomy 3294
 Ectopia cordis 936
 Ectopic auricular focus electrocardiographic
 diagnosis 810
 pregnancy 2657
 rhythm electrocardiographic diagnosis 810
 Ectropion, etiology (Table) 1569
 senile (Fig) 1570
 symptoms (Table) 1569
 Eczema 3330
 acridavine in 3113
 crura 3293
 diff diag (Table) 3409
 edema in 715
 epizootic See *Foot and mouth disease*
 (Fig) 650
 infantile 3343
 seborrheic 3432
 silver nitrate dressings in 3127
 solaris 3177
 tar in 3180
 Eczematoid dermatitis infections 3255
 Edema, 706
 allergic 713
 in amyloidosis 707
 angioneurotic, 3349
 allergen in, 353
 of larynx, 2101
 oral manifestations 1670
 of scrotum 2160
 in backward failure 711
 in burns 713
 capillary permeability and 712
 causes of 11
 cerebral 1439
 diff diag. (Table) 1487
 in hypertensive encephalopathy 816
 from chemicals 714
 in congestive heart failure 711
 treatment 949
 definition 11 3101
 desoxycorticosterone 715
 in Addison's disease 1277
 diff diag (Table) 717
 in diabetic nephrosis 708
 digitalis intoxication in 861
 electrocardiogram in (Fig) 834
 generalized diff diag (Table) 717
 in glomerulonephritis 707 2376
 chronic 2381
 in hypertension 906
 hypoproteinemia and 706
 inflammatory 713
 of legs hereditary 1400
 in vitamin B deficiency (Fig) 618
 menstrual 715
 diff diag (Table) 717
 in myxedema 716
 neonatorum 3151
 diff diag (Table) 3146 3373
 in nephritis 714
 in nephrosis 706
 of newborn 3151
 nutritional, 708
 Edema nutritional, diff diag (Table) 717
 posterior pituitary 716
 postoperative treatment, 4018
 postural 709
 in rheumatic fever 714
 salt, 12
 in serum sickness 713
 in skin lesions 715
 in toxemia of pregnancy 714 2640
 treatment, serum albumin in 71
 in vascular obstruction 709
 in vitamin C deficiency 715
 Edentate gastritis 1689
 Effluage 3766
 Effort syndrome 897
 Effulgration indications 3995
 Effusion, pericardial 1003
 pleural 2219
 diff diag (Table) 2032
 (Fig) 256
 sympathetic 2221
 tuberculous 2222
 Eggs in American diet 639
 in infant feeding 2755
 Ego and death instincts Freud's definition
 1337
 Egophony 3544
 diff diag (Table) 3542
 Egyptian cholera 1903
 Ehlers Danlos syndrome 3149
 diff diag (Table) 2808
 Eisenmenger's complex 961
 diff diag (Table) 863
 in infestations 964
 right heart failure from 942
 Ejaculatio praecox definition 1304
 retro data definition 1304
 Ejaculation 2402
 prematur 2410
 Ejaculatory ducts anatomy 2398 3638
 anomalies 2426
 infections 2469
 Elation, definition 1301
 Elbow dislocation 2975
 (Fig) 2975
 reduction (Fig) 2976
 treatment (Table) 2971
 epiphyseal injury 3024
 examination (Table) 3574
 fracture 3021
 protection in (Fig) 2998 2999
 injury complications 3025
 splint (Fig) 2994 2995
 tennis 2963
 Electric convulsive therapy in psychotherapy
 1330
 in psycho results (Table) 1372
 in schizophrenia, results (Table) 1367
 Electricity physiotherapy by (Table) 3,92
 Electrocardiogram 803
 abnormalities of 805
 analysis of (Table) 806
 in acute coronary closure (Fig) 40 8
 in acute glomerulonephritis (Fig) 826 832
 in acute pericarditis (Fig) 819
 in acute rheumatic carditis (Fig) 833
 in angina pectoris (Fig) 817 818 843
 after arsenical hepatitis (Fig) 827
 in auricular fibrillation (Fig) 842 843 845
 in auricular flutter (Fig) 841 842

- Electrocardiogram in auriculoventricular dissociation (Fig) 850
- in brain tumor (Fig) 837
- in breast carcinoma (Fig) 829
- in bronchial asthma (Fig) 825
- in bronchiectasis (Fig) 822
- in chorea (Fig) 839
- in chronic bronchitis (Fig) 838
- in congestive heart failure (Fig) 819 823
- in coronary artery disease (Fig) 818 826 829 830 831 832 837 838 844 847 848 849 850
- in coronary insufficiency (Fig) 817
- in coronary occlusion 986
- in diabetic coma (Fig) 833
- in digitalis poisoning (Fig) 847 848
- in duodenal ulcer (Fig) 836
- extracardiac alterations in, 807
- in gastro intestinal hemorrhage (Fig) 817
- in hyperthyroidism (Fig) 825
- interpretation of 804
- in intra auricular septal defect (Fig) 823
- inverted T₂ and T₁ wave (Fig) 835
- in hypertension essential (Fig) 817 820 821 830 841 4028
- in malignant (Fig) 821 822
- in mesenteric embolism (Fig) 842
- in mitral stenosis (Fig) 801 824 826 842 843 845 970
- in myocardial infarction (Fig) 814 815 816
- in myocarditis with trichinosis (Fig) 834
- in myxedema 1196
- in nephrosis with pericardial effusion (Fig) 834
- in neurocirculatory asthenia (Fig) 808 813
- normal analysis of (Table) 806
- (Fig) 800 803 811
- waves of 804
- in obesity (Fig) 808 812 813
- in periarthritis (Fig) 836
- in pericardial effusion (Fig) 834
- in pernicious anemia 1080
- in precordial pain (Fig) 814 816
- in pulmonary edema (Fig) 819
- in pulmonary embolism (Fig) 819
- in pyloric obstruction (Fig) 835
- in rheumatic carditis (Fig) 820 833 830
- in valvular defect (Fig) 837 812 843, 845 846
- in status asthmaticus (Fig) 823
- in supraventricular tachycardia (Fig) 840 849
- in syphilis 339
- in thrombo-angitis obliterans (Fig) 4028
- time relation in (Fig) 775
- in tricuspid disease (Fig) 824
- in trigeminal rhythm (Fig) 824
- in uterine bleeding (Fig) 817
- Electrocardiography 802
- atlas of 811
- in infancy indications 2738
- Electrocoagulation bronchoscope used for 2026
- in carcinoma 577
- in cervicitis 2601
- (Table) 3792
- Electroconvulsions (Table) 3792
- Electrodesiccation in removal of warts 3292
- (Table) 3792
- Electrodiagnostic equipment 3588
- examinations, list, 3588
- Electro-encephalograms classification, 1404
- patterns (Fig) 1403
- Electro-encephalographic focus types (Fig) 1427
- Electroencephalography 1403
- in infancy indications 2737
- Electrogastroscopy 1403
- Electrolysis (Table) 3792
- for epilation evaluation 3140
- in hypertrichosis 3438
- in telangiectasis 3203
- Electrolyte imbalance 718
- postoperative treatment 4007 4012
- Electronegative wave of electrocardiogram 804
- Electropositive wave of electrocardiogram, 804
- Electroshock unit (Fig) 3792
- Electrosurgery (Table) 3792
- Elephantiasis of arms causes (Table) 969
- manifestations (Table) 969
- filial, 3321
- of legs causes (Table) 969
- manifestations (Table) 969
- neuromatosa, 1415
- of scrotum 2459
- of vulva 2597
- Elephantoid fever 3323
- Elimination diets 683
- in allergy 562
- therapy in allergy 563
- Elizars 3820 3821
- Elliott trephine operation, 1558
- Embolectomy indications for 3994
- Emboli, postoperative manifestations (Table) 4016
- treatment (Table) 4016
- Embolism definition, in
- fever in 25
- mesenteric, electrocardiographic changes in, 808
- (Fig) 842
- pulmonary 2086
- diff diag., 2089
- electrocardiographic changes in 808 810
- (Fig) 819
- treatment 2089
- in quinsidine intoxication, 263
- in typhoid fever 229
- valvular defect predisposing to 972
- Embolization See also Embolism
- cerebral 1444
- diff diag (Table) 1437
- fever in diff diag (Table) 1007
- Fmbyroma of Walms pathology 2327
- Embryotoxon, definition 1561
- (Table) 1591
- Emergency bag 3751
- contents list 3750
- Emesis in vagal stimulation, 851
- Emetics 1757
- Emetine in amebiasis 529
- Emission nocturnal 2412
- premature, 2402
- Emmenagogues 2512
- Emmenm, evaluation (Table) 2515
- Emodin cathartics 1828
- Emotion(s) definition, 1300
- involuntary nervous system and 1 91
- nerve impulses in, 4
- Emotional development in infancy 2727
- disturbances, allergy and 553

- Emotional instability following encephalomyelitis, 453
- Emphysema, bronchitis with (Fig) 833
- cardiac contour in (Fig) 794
- complicating pertussis, 282
- pulmonary 2056
- (Fig) 2057
- right heart failure from 242
- Empyema following subphrenic abscess, 1923
- in lobar pneumonia, 2180
- necessitatis diff diag (Table) 8523
- thoracis 2122
- diff diag (Table) 404
- pathology 2219
- penicillin lavage in, 2223
- in pleuritis 2222
- treatment, tyrothricin in, 106
- Emulsions 2133
- Emanthema involving oral and buccal surfaces 3383
- oral, diff diag (Table) 1068
- Encephalitic psychoses, 1381
- Encephalitis 441
- animal inoculation in (Table) ■
- atypical torulosis vs., 498
- in bacterial infections 447
- complicating antirabies treatment 446
- measles 414 446
- mumps 483
- pertussis 447
- varicella, 446
- diff diag 444
- epidemic 444
- diff diag (Table) 442
- equine 451
- diff diag (Table) 443
- eastern, in infants 432
- mosquito as vector in (Table) 42
- neutralization test in 59
- serologic test in (Table) 59
- vaccine evaluation, 79
- western, 453
- herpes simplex virus causing 436
- Japanese B 415
- neutralization test in 59
- serologic test in (Table) 59
- lethargic, 441 See also *Encephalitis epidemic*
- in lymphocytic choriomeningitis 449
- ophthalmic manifestations 1684
- postinfectious 445
- diff diag (Table) 442
- postvaccinal 433 445
- quarantine data on (Table) 88
- Russian seasonal 445
- neutralization test in 59
- serologic test in (Table) 59
- St Louis 454
- diff diag (Table) 443
- neutralization test in, 59
- serologic test in (Table) 59
- treatment 447
- vaccine St Louis evaluation 79
- von Economo's, 441
- Encephalocel cephalhematoma and diff diag 2772
- Encephalomyelitis equine 451 See also *Encephalitis equin*
- Encephalomyelomeningitides nonpurpurative 1460
- Encephalomyelomeningitides, nonpurpurative diff diag (Table) 442
- Encephalomyelomeningitis purulent 1468
- Encephalopathies 1501
- hemorrhagic, in asphenamine therapy 124
- hypertensive 207
- in acute glomerulonephritis, 2376
- treatment 216
- lead, 764
- toxic, treatment, 343
- End organ, intestinal tuberculosis, 1862
- Endamoeba coli, differential characteristics (Table) 3733
- differentiation (Table) 328
- in intestinal tract, 149
- histolytica, description, 525
- differential characteristics (Table) 3733
- differentiation (Table) 528
- in intestinal tract, 149
- permanent smear for 3733
- in stool (Fig) 327
- test, 3729
- nana, differential characteristics (Table) 3733
- differentiation (Table) 528
- Endarteritis obliterans, 1020 See also *Thromboangitis obliterans*
- Endemic disease definition 64
- Endobronchial abscess (Fig) 2074
- pathology (Fig) 2074
- Endocarditis, arteriosclerotic, diff diag (Table) 1018
- in backward failure 244
- bacterial acute 1020
- diff diag (Table) 1018
- subacute 288 1071
- Bracht-Wichter lesions in, 1021
- complicating rheumatic fever 101
- (Fig) 1022
- treatment, 1024
- kidney lesions in, 2387
- Janeway lesions in, 1023
- (Fig) 1022
- ophthalmic manifestations, 1387
- skin in, 1023
- treatment, 1024
- heparinization in 1024
- susceptibility to in congenital cardiac disease 965
- valvular defects predisposing to 972
- diff diag (Table) 1018
- lenta, 1021 See also *Endocarditis bacterial, subacute*
- rheumatic, 1016
- clinical manifestations 1017
- diff diag (Table) 1018
- electrocardiogram in, 1017
- (Fig) 1016
- syphilitic, 1024
- diff diag (Table) 1018
- thrombotic nonbacterial 1020
- verrucous atypical 1019
- diff diag (Table) 1018
- renal complicat ons in 2372
- Endocervicitis (Fig) 2396
- non specific, acute 2006
- chronic 2600
- Endochondral ossification 2 93
- Endocrine(s) effect on fluid balance 703
- glands, diseases, 1143 See also *Endocrinopathies*

- Endocrine(s) glands in pregnancy 2605
 substances origin (Table) 1149
 principal action (Table) 1149
 system involuntary nervous system and (Table) 1397
- Endocrinologic leukoderma diff diag (Table) 3404
- Endocrinologist 3901
- Endocrinology experimental 1143
 misuse of knowledge in 1146
- Endocrinopathies 1144
 alopecia in 3143
 amenorrhea in diff diag (Table) 2618
 anorexia in diff diag (Table) 1779
 asthenia in diff diag (Table) 2890
 clinical 1144
 constipation in diff diag (Table) 1853
 cutaneous manifestations 3938
 diagnostic methods in 1146
 diarrhea in diff diag (Table) 1840
 gums in diff diag (Table) 1701
 hypertension and 901
 impotence in diff diag (Table) 2409
 incidence Johns Hopkins Hospital (Table) 1145
 of infancy but 2759
 lip disturbances in diff diag (Table) 1685
 menorrhagia in diff diag (Table) 2557
 oral manifestations diff diag 1673
 pregnancy and 2673
 pruritus in diff diag (Table) 3170
 substitution therapy in 1148
 treatment methods 1147
 vaginitis in diff diag (Table) 2548
 variable factors in 1144
- Endodermophyton 3307
- Endogenous tuberculosis 267
- Endometriosis 2559
 androgen therapy in dosage 2560
 distribution (Table) 2558
 (Fig) 2559
 vaginal (Fig) 2560
- Endometritis gonorrheal 2608
 postabortal 2606
 puerperal 2602
 clinical manifestations 2605
 prophylaxis 2603
 septic 2606
 tuberculous 2610
 (Fig) 2610
- Endomyces characteristics 487
- Endoscopy per-oral technic 2023
 in re piratory infections 2108
- Endospore definition 485
- Endotoxin bacterial virulence and 141
 mechanism 77
- Enema(s) 1824
 barium 1824
 in infancy indications for 2737
 cleansing 1824
 retention 1824
 medicated 1860
- Energy requirements 285
- Enophthalmos 1577
- Enteric fever 231
 fly as vector = (Table) 42
- Enteritis acute 1878
 chronic, ulcerative See *Heilis regional*
 due to vitamin B deficiency 1839
- Enterotomostomy 1832
- Enterobius vermicularis morphology (Table) 3733
 size (Fig) 1894
 in stool (Fig) 3731
- Enterocolitis of chemical origin 1872
 in infancy diff diag (Table) 2730
- Entero-enterostomy indications for 3993
- Enterogastrone 1793 1821
- Enteroptosis (Figs) 3489 3490 3491
- Enterorrhaphy 1832
 indications for 3995
- Enterostomy 1832
 indications for 3993
- Enterotomy 1832
- Entropion etiology (Table) 1569
 symptoms (Table) 1569
- Enucleation of eye 1559
- Enuresis diff diag (Table) 2263
- Eosin in pityriasis rosea 3412
- Eosinophilia in allergic colitis 1842
 in dermatitis herpetiformis 3372
 diff diag (Table) 342
 in periarthritis nodosa 1029
- Eosinophilic granuloma 2843
 (Fig) 2842
 pneumonia 2104
 allergen in 553
 diff diag (Table) 404
- Eosinophils morphology 2702
 in nasal secretion, 2097 2099 2100
- Ephedrine 3880
 in asthma, 2103
 in complete heart block 830
 dosage 3877 3881
 pre-anesthetic, 3913
 in gravitation shock 903
 in infancy dosage 2745 2746
 pharmacology 3881
 prescription 3349
 in respiratory disturbances 1028
 in rhinitis 2116
 in shock prevention 938
 in syncope 923
 therapeutics 3881
- Ephedres 3175
 diff diag (Table) 412
- Epiphyal acetate at menopause 2506
- Epicanthus 1561
 (Fig) 1561
- Epicondylitis of humerus 2953
- Epidemic diarrhea of newborn infant 2786
 dropsy 1583
 encephalitis 441
 diff diag (Table) 442
 in lymphocytic choriomeningitis 449
 hemoglobinemia diff diag (Table) 1074
 hemoglobinuria, 1076
 diff diag (Table) 1087
 keratoconjunctivitis 1624
 neutralization test in, 111
 serologic test in (Table) 59
 treatment of tyrothricin 106
 myalgia 403
 pleurodynia 493
 diff diag (Table) 404
 typhus 369
- Epidermis diagram (Fig) 3199
- Epidermolysis bullosa 3151
 diff diag (Table) 3154 3331
 eye signs 1583

- Epidermolysis bullosa (Fig) 3159
 of infancy diff diag (Table) 3146
 nails in 3150
- Epidermophyton characteristics 487
 inguinal 3 93
- Epididymectomy in tuberculous epididymitis 2464
- Epididymis abscess 2462
 actinomycosis 2466
 anatomy 2397 2638
 anomalies 2426
 leprosy 2465
 tumors 2444
- Epididymitis acute 2461
 chronic, 2462
 syphilitic 2465
 tuberculous 2462
 diagnosis 2464
- Epididymo-orchitis 2462
- Epidural block anesthetics 3092
 hemorrhage 1453
- Epigastric fullness definition 1769
 hernia 1799 3093
 pain diff diag (Table) 1788
 tumors diff diag (Table) 1814
- Epiglottis carcinoma 2070
- Epiglottitis acute 2159
- Epilabial waxes evaluation 3140
- Epilation by electrolysis evaluation 3140
 (Table) 3792
- Epilepsy 1515
 allergen in 553
 after asphyxia neonatorum 2763
 clinical features of (Table) 927
 diagnosis pitressin test in 1516
 diet in 1517
 diff diag (Table) 927
 differentiation from pheochromocytomas 1265
 marriage and 1518
 ophthalmic manifestations 1584
 pregnancy and 2647
 psychoses and 1587
 syncope vs 926
 tests pitressin in 1119
 treatment 1517
- Epinephrine 3577
 in allergy 3879
 in angioneurotic edema of larynx dosage 3350
 in asthma 2103 3879
 in asthmatic paroxysms 3119
 in complete heart block 880
 emergency theory of 1390
 in hay fever dosage 2098
 in histamine poisoning 3892
 in hypoglycemic episodes 1245
 in infancy dosage 2743 2746
 inhibition by gotamine 3883
 in insulin shock dosage 1258
 in involuntary nervous system 1390
 in malaria 3879
 a mydriatic 3119
 properties 3878
 in pruritus dosage 3349
 in respiratory disturbances dosage 20 8
 in rhinitis 2116
 shock from 936
 in shock prevention 938
 therapeutics, 3879
- Epinephrine toxicity 3880
- Eppiphora See *Tearing*
- Epiphyseodema 2814
- Epiphyses disturbances diff diag (Table) 2803 2826 2930
 joint pain in diff diag (Table) 2803
 limb in diff diag (Table) 2832
 pain in lower extremities diff diag (Table) 2869
 femoral slipping of 3043
 radial, displacement of treatment (Table) 3015
- Epiphysitis 2926
 of hip 2927
- Epiphritis 1836
- Epi-keratitis 1631
- Epistomy 2693
 indications for 3093
 repair 2694
 technic (Figs) 2692 2693
 types 2694
- Epispadias symptoms (Table) 2286
- Epistaxis cauterization 3059
 diff diag (Table) 2123
- Epitarsus definition, 1561
- Epithelial scrapings of conjunctiva, technic 1546
 stimulants 3112
- Epithelioma basal-cell, 3220
 acid nitrate of mercury in 3122
 diff diag (Table) 3214
 (Fig) 3220
 diff diag (Table) 3210 3218 3298
 of ear diff diag (Table) 2113
 of face diff diag (Table) 3207
 of genitals diff diag (Table) 3274
 of lip 1717
 multiple benign cystic 3208
 diff diag (Table) 3211 3300
 of nails 3454
 of nose diff diag (Table) 2110
 squamous cell 3223
 diff diag (Table) 3215
 (Fig) 3220
 of lid (Table) 1568
- Epitheliomatosis multiple 3222
- Epizootic disease definition 11
 eczema 437
- Epluchage (Fig) 3961
- Eponychia definition, 3973
- Epsom salts 1830
 as analgesic 3121
 dosage 613
 therapeutics 3824
- Equine encephalomyelitis 451
- Equinovarus deformity (Fig) 2950
- Equipment office list 3743
- Equivalents metric-apothecary 3803
- Era of function 6
 of morphology 6
- Erb's palsy 2776 2951
 deformity in diff diag (Table) 2954
 (Figs) 2776 2952
 sign 724
- Erection penis 2401
 disturbances 2402
- Ergonovine therapeutics 2310
 in third stage of labor dosage 2709
 toxicity 2310
- Ergosterol dosage 621

- Ergot poisoning 2510
 antidotes 2511
 preparations 2509
 dosage (Table) 2510
 pharmacology 2510
 toxicity 2510
- Ergotamine 3383
 in infancy dosage 2742
 in migraine 1509
 therapeutics 2510
- Ergotism 2510
 circulatory disturbances in (Table) 255
 diff diag (Table) 210
- Ergotoxine 3383
- Erosio interdigitalis blastomycetica 3301
- Etiron in osteo-arthritis 2363
- Eruptions See also *Rashes*
 afebrile diff diag (Table) 175
 bullous in prenatal syphilis 3287
 diff diag (Table) 3218
 drug See *Drug eruptions*
 feigned 3232
 (Fig) 3233
 maculopapular diff diag (Table) 412
 generalized diff diag (Table) 3282
 localized diff diag (Table) 3390
 oral diff diag (Table) 1669
 pustular diff diag (Table) 422
 in sarcoidosis 3271
 scarlatiniform diff diag (Table) 180
 vesicular diff diag (Table) 422
- Eruptive fevers rash in diff diag (Table) 172
 signs other than rash in diff diag (Table) 174
- Erysipelas 167
 diff diag (Table) 3162 3267
 of ear diff diag (Table) 3306
 facial (Fig) 165
 of nose diff diag (Table) 2110
 oral manifestations 1678
 quarantine data on 66
 of scrotum 2459
 streptococcus antitoxin 166
 evaluation 63
 treatment 170
 types 169
- Erysipelatous dermatophytid 3300
- Erysiploid 323 3273
 diff diag (Table) 3162 3296
 methods of diagnosis 3240
 penicillin in evaluation 111
- Erysipelothrix erysiploides 323
 murisceptica 328
 rhusiopathiae 323
- Erythema 3161
 definition 3101 3104
 diff diag (Table) 3162
 due to drugs 3338
 ad igne 3169
 diff diag (Table) 3154 3162
 induratum 3271
 (Fig) 3265
 infectiosum 418
 multiforme allergen in 553
 b iliosa (Fig) 3373
 diff diag (Table) 422 3162 3210 3347
 3360 3378
 exudativum 3374
 (Fig) 3375
 in (Fig) 3376
- Erythema multiforme oral manifestations 1667
 rash in diff diag (Table) 3282 3290
 multiforme-like eruptions, 3375
 (Fig) 3294
 syphilitic of back (Fig) 3230
 nodosum 3377
 allergen in 553
 diff diag (Table) 3210 3250 3360 3375
 (Fig) 3376
 of legs in sulfathiazole therapy (Fig) 90
 oral diff diag (Table) 1668
 pernio 3173
 simplex nose in diff diag (Table) 2110
- Erythematous rashes diff diag 3336
- Erythemaalgia 1004
- Erythrasma 3301
- Erythroderma, 3145 See also *Acrolysis*
 polyneuritis 1500
- Erythremia 1093 See also *Polycythemia*
 acute 1105
- Erythroblastic anemia, Cooley 1071
 roentgenographic findings 1072
- Erythroblastosis foetalis 1067
 blood count in 1070
 diff diag 1070
 (Table) 1060 1067
 (Fig) 1069
 laboratory data in 1070
 treatment, 1071
- Erythroblasts normal count (Table) 1043
- Erythrocyte count in infancy indications 2759
 technic 3698
 disturbances 1055
 (Fig) 1036
 fragility normal value (Table) 1046
 maturation factor 1038
 disturbances diff diag (Table) 1055
 normal appearance 3699
 value (Table) 1046
 physiology 1038
 in urine 3633
- Erythrocytosis 1092
- Erythroderma, 3333
 definition 3104
 hydrochloride 3388 3390
- Erythrol tetrahydrate 3623
 in hypertension 912
- Erythroleukemia 1105
- Erythromelalgia 1002
 diff diag (Table) 180 906 3162 3150 3290
- Erythroplasia, 3381
 of genitals diff diag (Table) 3274
- Erythroxia in streptococci, 159
- "Escape factor 3754
- Escherichia coli, bacteriology 218
 properties (Table) 926
- Esnarch bandage technic of applying 3275
- Esophagotomy 1723
 indications for 3221
- Esophagitis decubitus 1737
 peptic, 1736
- Esophagoscopy 1723
- Esophagus, absence congenital 1730
 anatomy 3559
 bleeding 1730
 carcinoma 1738
 (Fig) 1739
 chemical burn of 1735
 displacement (Fig) 1721

- Esophagus disturbances, 1720
 treatment 1723
 diverticula 1730
 diff diag (Table) 3514
 traction 1734
 (Fig) 1734
 examination, special methods 1720
 fistula, congenital 1730
 foreign bodies in 1733 3984
 injuries 1733
 irradiation burns, 1734
 physiology 1720
 posterior view (Fig) 3602
 radiography 1744
 short congenital 1731
 strictures, 1735
 telangiectases 1730
 ulcer of peptic 1738
 (Fig) 1737
 varices, 1728
 (Fig) 1729
 webs 1730
 Espundia, 3317 See also *Leishmaniasis American*
 Essential hypertension 900 See also *Hyper-tension essential*
 Esthiomene 471
 Estivo-autumnal malaria 514
 Estradiol evaluation (Table) 2515
 Estriol evaluation (Table) 2515
 Estrogen, activity 2513
 carcinogenic properties of 2517 3916
 preparations 2515
 therapeutics 3323
 therapy in atrophic rhinitis 2516
 contraindications 2516
 in Cushing's syndrome 1164
 in diabetes mellitus 2516
 in gonorrhea, 224
 in hypertension, 913
 indications 2516
 in infancy dosage 2744
 in pregnancy 2627
 in prostatic carcinoma 2450
 toxicity 2517
 Estrone evaluation (Table) 2515
 in skin diseases 3119
 Ether in anesthesia 3924
 as cleansing agent, 3114 3119
 time, determination 787
 Ethinyl estradiol, evaluation (Table) 2515
 Ethmoid sinuses anatomy 3593
 sinusitis acute 2125
 Ethyl chloride 3915
 in minor surgery (Table) 3914
 hydrocupreine in pneumococcus infection 204
 Ethylene anesthesia in major surgery 4003
 Ethylodacetate, 745
 Eucatropine dosage (Table) 3875
 Eunuchism, postpuberal 2414
 before and after treatment (Fig) 2415
 prepuberal 2413
 Euphoria, definition, 1301
 European relapsing fever 357
 typhus 369
 Eustachian orifices, catheterization 2015
 (Fig) 2018
 tube infection, 2141
 Euthanasia in inoperable carcinoma, 578
 Eutoca, 2696
 Evaporated milk, 635
 in infant feeding 2753
 Ewald breakfast 3723
 stomach tube 1750
 Ewart's sign in pericarditis 1009
 Ewing's tumor 2845
 (Fig) 2845
 Exaltation definition 1301
 Examination, physical See *Physical examina-tion*
 Examining room 4046
 equipment, 4047
 (Figs) 4045 4046
 Exanthema subitum 419
 Exanthematous conjunctivitis 16.3
 Exanthems diff diag (Table) 3267 3368
 pruritus in, diff diag (Table) 3170
 Excitability of heart, 77°
 Excoriation, definition, 3104
 diff diag (Table) 3186
 neurotic, 3231
 (Fig) 3232
 Excreta, disinfection, 69
 Excretion urography 2251
 Exenteration of orbit 851
 Exercise in circulatory disturbances 1559
 corrective 3757
 in orthopedic disturbances 2809
 in faulty posture 3039
 after foot or leg fracture 3001
 in gravitation shock, 925
 hematologic variations due to 1042
 in hypertension, 913
 in obesity 697
 passive 3756
 in peripheral vascular disease 938
 physical, 3756
 postpartum 2719
 resistive motion 3756
 Schott 3756
 in thrombo-angitis obliterans 1031
 underwater (Table) 3791
 Exfoliative dermatitis 3383
 diff diag (Table) 175
 Exhaustion 2391 See also *Fatigue*
 Exhibitionism definition 1303
 Exophthalmic goiter See *Hyperthyroidism*
 Exophthalmometry 1846
 Exophthalmos 1575
 diff diag (Table) 1573
 in hyperthyroidism 1203
 measurement 1546
 pulsating 1577
 Exostosis of bone 2800
 Exotoxin bacterial virulence and 144
 mechanism 77
 Expansion, phase in manic depressive psy-choses 1369
 Expectorants 2029
 ammonia as 614
 in infancy dosage 2744
 iodides as 608
 Explosives fever due to 24
 Exton Rose test for diabetes mellitus 1250
 Extracellular water constituents of 586
 Extradural abscess 1468
 Extragenital syphilis 332
 Extrahin, dosage (Table) 1048
 Extremities, exercises for after fracture 3001
 lower amputation (Fig) 3954

- Extremities lower dislocations manifestations (Table) 2977
 treatment (Table) 2977
 examination 3574
 (Table) 3574
 fractures treatment (Table) 3038
 pain in diff diag (Table) 2868
 upper dislocations clinical manifestations 2971
 treatment 2971
 examination 3573
 (Table) 3574
 fractures manifestations (Table) 3014
 treatment (Table) 3014
 section (Fig) 3573
- Extra ocular muscles functions (Table) 1527
 operations on 1559
- Extrasystoles 887
 in digitalis intoxication 860
- Exudates characteristics (Table) 3738
- Eye abnormalities of congenital 1560
 treatment 1861
 accommodation, 1535
 disturbances 1537
 (Fig) 1536
 allergy in 1648
 test in (Fig) 554
 anatomy 3612
 arteriosclerotic changes in 908
 (Fig) 907
 bacteria in 150
 bacteriology 1646
 bandage technic 3984
 black diff diag (Table) 1612
 blood vessels of 3619
 burns 1572
 treatment 1872
 carcinoma manifestations (Table) 1566
 cataract, 1592
 (Fig) 1693
 chambers of anatomy 3616
 circulation, 1521
 cornea See Cornea
 cysts lesions (Table) 1566
 manifestations (Table) 1566
 sites (Table) 1566
 treatment 1567
 dermatoses in 1561
 diseases 1560
 diff diag list 1517
 history taking 1633
 in infancy list 2739
 laboratory examinations for 1516
 mechanical (Table) 1569
 dominant tests for 1513
 dressing application 1555
 enucleation of 1539 3994
 examination of 3622
 (Figs) 3624
 methods for 1540
 fibers 1538
 focal illumination technic 3622
 (Fig) 3624
 foreign bodies in 1572 3623 3993
 fundus examination 3619
 (Fig) 3630
 normal (Fig) 1523
 hypotension 1583
 in infancy examination 2731
 infections 1601
- Eye infections mite as vector in (Table) 42
 in infectious jaundice (Fig) 359
 inflammations 1608
 focal infection in 1632
 injection conjunctival and ciliary differ-
 entiation (Table) 1524
 injuries to (Table) 1571 1601
 local applications for (Table) 1548
 movements of 1526
 recording 1546
 muscles 1530
 anatomy 3621
 deficient action symptoms (Table) 1646
 extraocular functions (Table) 1527
 (Fig) 1526
 function normal (Table) 1546
 innervation (Table) 1646
 involved in movements (Table) 1527
 operations on 1559
 in newborn care 2749
 orbit of (Fig) 3620
 muscles 3621
 pain in diff diag (Table) 1532
 papilledema 1577
 paralysis 1644
 of abducens (Fig) 1618
 perineuritis 1640
 physical therapy for 1547
 physiology 1524
 preparations 3140
 pupils abnormalities diff diag (Table) 1533
 physiology 1532
 reactions pharmacology 1531
 reflexes 1533
 refraction of light 1535
 disturbances 1536
 refractive media anatomy 3618
 in riboflavin deficiency (Fig) 621
 section (Fig) 3614
 serum sensitivity test in (Fig) 86
 shadow chemicals in 3140
 in shock 931
 surgery 1557
 minor 1554
 treatment biological 1550
 diathermy for 1540
 foreign protein therapy in 1532
 by heat 1547
 hormone therapy in 1553
 hyperthermia in 1552
 iontophoresis in 1550
 local applications (Table) 1548
 massage in 1550
 penicillin in dosage 1553
 sulfonamides in 1532
 systematic methods of 1550
 tuberculin therapy in, dosage 1551
 tyrothricin in 1553
 ultraviolet therapy in 1560
 vitamin B complex in 1554
 in typhemia 324
- tumors 1567
 clinical manifestations (Table) 1566
 sites (Table) 1566
 vitreous synchysis scintillans (Fig) 1393
 washes chemicals in 3141
 in Weil's disease (Fig) 359
- Eyeball transillumination, 3632
- Eyebrows absent diff diag (Table) 2506
 pencil chemicals in 3141

- Eyebrows pomade chemicals in 3131
 scant diff diag (Table) 1612
 shaggy diff diag (Table) 3506
 Eyelashes disturbances diff diag (Table) 1612
 pomade chemicals in 3131
 Eyelid abcess 1609
 anatomy 3612
 application of silver nitrate to 1554
 carcinoma (Fig) 1567
 coloboma definition 1560
 (Fig) 1561
 disturbances diff diag (Table) 1612
 ecchymosis etiology (Table) 1571
 symptoms (Table) 1571
 edema of diff diag (Table) 1613 3507
 emphysema etiology (Table) 1571
 symptoms (Table) 1571
 inflammation 1609
 lacerations repair 1556
 local applications for (Table) 1548
 lower eversion technic (Fig) 3624
 manual expression 1333
 margin cysts 1555
 plastic operations on 1557
 ulcers of diff diag 1609
 upper eversion technic (Fig) 3624
 foreign bodies in removal 1555
 warts of trichloro etic acid in 3136
 xanthelasma of 3243
 removal 3133
 xantheloma of (Fig) 3241
 Eyestrain 1537

 Face abnormalities diff diag (Table) 3 06
 anatomy 3508
 chance (Fig) 335
 dermatoses of diff diag (Table) 3266
 edema of diff diag (Table) 3507
 eruption of in sulfonamide therapy (Fig) 30
 erysipelas of (Fig) 165
 fractures 3013
 treatment (Table) 3001
 injuries 3034
 treatment 3053
 multiple benign cystic epithelioma of 3203
 pain in diff diag (Table) 3132
 powders contents of 3139
 preparations 3139
 psoriasis 3418
 radiodermatitis of (Fig) 3160
 sebaceous cyst of treatment technic, 3203
 sebaceous eczema of (Fig) 3425
 Facial asymmetry diff diag (Table) 3507
 hemiatrophy progressive 1484 3231
 marks evaluation 3130
 nerve injury 1458
 in infancy 27,6
 paralysis central diff diag (Table) 3507
 in otitis media 2147
 peripheral diff diag (Table) 3507
 supranuclear 1483
 tics diff diag (Table) 3507
 Facies, adenoid 2140
 diff diag (Table) 3509
 in infancy examination, 2731
 leoneine 274
 prognosis in pituitary dwarfism 1163
 Fainting See Syncope
 F llopar tub anatomy 3615
 Fallow tetralogy of 361
 diff diag (Table) 363
 manifestations 361
 right heart failure from 312
 Falsely positive test significance 61
 Falsification retrospective definition 1209
 Familial anemia hemolytic 1060
 diff diag (Table) 1060
 (Fig) 1061
 spherocytosis 1061
 Famine fever 337
 Faradism (Table) 3792
 Farcy 377
 Farcy bud 3273
 Fascia lata syndrome 2307
 transplant 2314
 Fascial spaces of hand anatomy 3074
 Fascias of neck 3519
 Fasciolopsis buski 1893
 Fat(s) See also Lipid
 absorption 595
 composition 591
 content of foods classification (Table) 639
 diet high in 673
 u. of 596
 low in 762 674
 use of 596
 dietary arteriosclerosis and 978
 digestion 595
 food value of 630
 metabolism carbohydrates and 590
 in milk, 634
 necrosis of newborn 3131
 diff diag (Table) 3147
 pancreatic 1939
 (Fig) 1910
 traumatic of breast 2546
 sources 596
 storage 606
 Fat carbohydrate ratio in normal diet 680
 Fatigue 2888
 combat 2888
 diff diag (Table) 2890
 in hyperthyroidism 1203
 in hypotension diff diag (Table) 917
 industrial 2889
 in myxedema 1191
 prevention 2899
 prognosis in myasthenia gravis 2886
 Fatty acid oxidator of 516
 degeneration 9
 (Fig) 8
 heart muscle (Fig) 8
 Faucial tonsils 3603
 Favism diff diag (Table) 240
 Favus 3301
 diff diag (Table) 3255
 (Fig) 3291
 pigmentation in diff diag (Table) 3154
 of scalp diff diag (Table) 3139
 Febrile intrathoracic disorders diff diag (Table) 401
 psychoses 1376
 Fibris recurrens 337
 Feces See also Stool
 bacteria identification technic 225
 effect of insoluble sulfonamides on 101
 examination chemical 3728
 macroscopic 5728

- Feces examination, microscopic 3729
 occult blood 3728
 fat in examination 1938 3729
 impaction 3985
 cause of intestinal obstruction 1875
 treatment 3985
 incontinence diff diag (Table) 1915
 ova in comparative size (Fig) 1894
 Federal farms for treatment of morphism 3862
 Narcotic Regulations 3816
 regulations concerning serum 3802
 Feeblemindedness 1332
 definition, 1292
 diff diag (Table) 1935
 Feeding of infants 2749
 artificial 2751
 breast 2749
 position 2749
 Feet See Foot
 Feigned eruptions 3222
 diff diag (Table) 3218 3378
 (Fig) 3435
 Felon treatment 3973
 (Fig) 3972
 Felty's syndrome 1100 2918
 Female androgen therapy in 2406
 breast inspection 3543
 genitalia absence 2530
 anatomy 3642
 infertility diff diag (Table) 2492
 masculinization, diff diag (Table) 2481
 normal vi cera in (Fig) 3489
 obese viscera in 3490 3491
 prepuberal development 2478
 reproductive system 2477
 congenital malformations 2429
 disturbances diagnosis of methods 2494
 diff diag list 2492
 hematuria in, diff diag (Table) 2307
 in infancy list 2759
 low back pain in diff diag (Table) 3072
 metrorrhagia in diff diag (Table) 2565
 operative procedures (Table) 2302
 pain in hypogastrium in diff diag (Table) 2302
 history taking 2495
 infections 2381
 injuries 2533
 pharmacotherapy in, 2509
 topical applications in dosage (Table) 2501
 treatment methods 2500
 tumors 2547
 sexual development, diff diag (Table) 2480
 intercourse in, 2490
 sexuality disturbances diff diag (Table) 2491
 Feminization of male 3436
 diff diag (Table) 2481
 Femur deformity in dislocated hip (Fig) 2978 2979
 epiphysis fracture treatment (Table) 3038
 separation (Fig) 3011 3042
 slipping 3043
 fracture 3037
 lower end, 3045
 supracondylar (Fig) 3046
 Femur hernia 3093
 neck, fracture 3039
 treatment (Table) 3038
 nerve injuries motor signs (Table) 1400
 shaft fractures 3043
 (Fig) 3044
 traction in (Fig) 3045
 vein interruption in thrombosis 1123
 Fenestration 2037
 indications 3995
 Fermented milk, 638
 Ferments gastric 1754
 pancreatic, 1827
 Ferree-Rand perimetre (Fig) 1541
 Ferrous carbonate dosage (Table) 1048
 sulfate in chronic blood loss 1060
 dosage (Table) 1048
 Fertile period 2493
 Fertility control 2502
 Fertilization 2491
 time 2491
 Festination diff diag (Table) 2496
 Fetulism definition 1503
 Fetus blood formation in 1040
 effect of Rh immunization on 1008
 heart sounds in labor 2703
 hydrops 1068
 measurements during pregnancy 2630
 movements 2628
 soulbe 2628
 Fever 19 22
 in scindous 24
 in anemia 25
 artificial 25 See also *Hyperthermy*
 in rheumatic fever 116
 aseptic, 23
 associated with pregnancy diff diag (Table) 2642
 basal metabolism in diff diag (Table) 729
 blackwater 514 1076
 Charcot 2004
 chart in tuberculous pneumonitis 2201
 chills and 31
 circulatory manifestations in, diff diag (Table) 1006
 clinical effects of 20
 in coronary thrombosis 25 284
 cryptogenic diff diag (Table) 23
 of infancy diff diag (Table) 2760
 deer fly 323
 in dehydration 24
 difficulty in diagnosis of 25
 in disorders of aged, 280
 of doubtful origin diff diag (Table) 26
 drug 21
 diff diag (Table) 718
 due to explosives 24
 due to poisoning 24
 elephantoid 2323
 in embolism 25
 eruptive rash in diff diag (Table) 172
 signs other than rash in diff diag (Table) 174
 false 23
 fictitious, 21
 hay See *Hay fever*
 hepatic, intermittent 2001
 herpetic 434
 hypostatic 25
 in infection 25

- fever infectious diff diag (Table) 30
 insomnia in, diff diag (Table) 1305
 intrathoracic disorders with diff diag (Table) 404
 in intravascular accident 25
 of metabolic origin 24
 diff diag (Table) 718
 metal fume 24
 neoplastic 23
 neurogenic 23
 in phlebitis 23
 physical, 23
 postoperative 21 4007
 pseudo-, 23
 ■ 382
 rat bite 363
 relapsing 357 See also *Relapsing fever*
 rheumatic 185. See also *Rheumatic fever*
 Rocky Mountain spotted, 376
 scarlet 171 See also *Scarlet fever*
 in scleroderma, 23
 skin texture and, 23
 in starvation 24
 surgery and 3909
 sympathetic 23
 thalamic 23
 therapeutic 2. See also *Hyperthermy*
 after transfusion, 86
 in tuberculo is treatment 271
 typhoid 225 See also *Typhoid fever*
 typhus 264 See also *Typhus fever*
 of unknown origin diff diag (Table) 26
 in childhood and infancy diff diag
 (Table) 2760
 uveoparotid, 1635
 in vaccine therapy 81
 yellow 477 See also *Yellow fever*
 Fibrillation, auricular diff diag (Table) 882
 electrocardiogram in (Fig) 842 843 845
 electrocardiographic diagnosis 811
 paroxysmal 885
 permanent 886
 quinidine i 882 884
 in tsutsugamushi fever 882
 muscular diff diag (Table) 2883
 ventricular 889
 electrocardiographic diagnosis 811
 Fibrin film with thrombin ■
 Fibrinogen in blood clotting 1109
 in plasma (Table) 6
 Fibrinogenopenia, 1118
 Fibrinolysin, bacterial virulence and 145
 in streptococci, 19
 Fibrinous pericarditis acute 1007
 Fibroma 2206
 (Fig) 870
 of gums 1715
 of nails 3454
 of nasopharynx 2069
 non-osteogenic, 2842
 of oropharynx 2070
 of ovary 2569
 Fibromyositis 2892
 cervical pt disturbances in diff diag
 (Fig) 2818
 joint motility in diff diag (Table) 2803
 2811
 lumbago in diff diag (Table) 3073
 occipital 2890
 pain in diff diag (Table) 2941
 Fibromyositis swellings of back in diff diag
 (Table) 2822
 treatment 2900
 manipulative 2900
 procaine injections, 2900
 Fibrosarcoma, 3226
 Fibrous hepatorenal, 1976
 mechanism 18
 myocardial 903
 of pancreas in infancy 2785
 pulmonary cardiac contour in (Fig) 794
 right heart failure from 942
 Fibrositis 2804
 of test, 2806
 rheumatoid arthritis and diff diag., 2918
 Fibrous dysplasia 2342
 Fibula shaft fracture of 3047
 treatment (Table) 3098
 Fiebre recurren te 337
 Fiedler's myocarditis, 1015
 Field block anesthesia, 3917
 (Fig) 3918
 Fièvre jaune 477
 recurrente 337
 Fifth disease 418
 diff diag (Table) 174 412
 rash in, diff diag (Table) 172
 symptoms other than rash in diff diag
 (Table) 2790
 Filaria, blinding 3326
 life cycle 3341
 Filariasis 3321
 antimony thiomalate in, 3325
 ascites in diff diag (Table) 1921
 diagnosis by smear in (Table) 50
 technic 3324
 diff diag (Table) 3274 3378
 edema in diff diag (Table) 717
 fever in diff diag (Table) 1006
 (Figs) 3322
 lymphadenopathy in diff diag (Table) 1196
 mite as vector in (Table) 42
 mosquito as vector in (Table) 42
 Filatow Dukes disease 415
 Filde a jar in anaerobic culture 140
 Filiform wart 3231
 Finger baseball 2960
 clubbed in congenital heart disease 962
 diff diag (Table) 2064
 in endocarditis 1023
 dermatoses of diff diag (Table) 3206
 dislocation 2977
 treatment (Table) 2971
 fractures 3034
 splint for (Fig) 2959
 infectious treatment, 3973
 mallet 3037
 pain in diff diag (Table) 2908
 trigger 2901
 webbed 2825
 Fingernail bed of (Fig) 785
 infection, treatment 3973
 Fish anemia factor 631
 composition of (Table) 640
 food elements in 642
 hook stomach 3560
 Fissure definition 3104
 of skin, diff diag (Table) 3218
 Fistula arteriovenous, 955
 auricular 3148

- Fistula biliary external 1992
 establishment procedures 3993
 genital 2544
 intestinal 2546
 rectovaginal 2545
 in lymphopathia venereum 472
 urinary 2515
 Fistula in ano 1914 3980
 (Fig) 3980
 Five day fever 383 See also *Trench fever*
 Fixation Freud's definition 1344
 Flagellar antigens in bacteria 143
 Flajani's disease See *Hypertthyroidism*
 Flatfoot 3078
 (Fig) 3077 3078
 Flatulence diff diag (Table) 1879
 Flavacidin (Table) 103
 Flavicin description 115
 Flatworms causing disease 41
 Flea bites 3189
 borne typhus classification (Table) 367
 life cycle (Fig) 3189
 as vector (Table) 4^o
 Flint's sign See *Austin Flint*
 Floating kidney 2293
 Flora gastro intestinal in adult 148
 Fluid balance in sulfonamide therapy 102
 body 5
 circulation 5
 forcing of in dietary 654
 intra ocular 1626
 loss See *Dehydration*
 replacement in acute hemorrhage 1059
 restriction in congestive failure 919
 Flukes causing disease 41
 intestinal 1898
 geographic distribution 1898
 Fluorescein 1648
 dyes in leprosy 277
 Fluorine in dental caries 1703
 poisoning clinical manifestations (Table) 753
 diagnosis (Table) 755
 occupations susceptible to (Table) 755
 oral manifestations 1678
 treatment (Table) 755
 Fluoroscopy 792
 chest diagnosis 3741
 in coronary occlusion 988
 of stomach 1744
 technic 3741
 Flutter auricular diff diag (Table) 882
 electrocardiogram in (Fig) 841 842
 electrocardiographic diagnosis 810
 paroxysmal 883
 permanent 884
 diaphragmatic 4094
 Fly bites 3191
 as vector (Table) 42
 Focal infection 42
 eye disorders due to 1632
 oral lesions and 1681
 Folic acid 631 1049
 dosage in pernicious anemia, 1033 2616
 Folin's tube for blood-sugar estimation (Fig) 3715
 Folin Wu Macro method of blood sugar determination 3714
 Follicle stimulation hormone (Table) 1154
 Follicular hyperkeratosis of vitamin A deficiency (Fig) 618
 Follicular lymphoblastoma 1197
 irradiation in 1053
 syphiloderma 3285
 Folliculin 2515
 Folliculitis decalvans 3142
 diff diag (Table) 3334 3159
 treatment 3142
 pustular 3249
 of beard diff diag (Table) 3437
 diff diag (Table) 3268
 (Fig) 3247
 Follutein in infancy dosage 2744
 Fomentation 3799
 Fontanelles 3303
 disturbances diff diag (Table) 2729
 Food allergy elimination diets in, 562
 atopy 551
 canning botulism and 313
 causing urticaria, 3349
 composition of (Tables) 640 613 616 619
 651 652 II 4 655
 Drug and Cosmetics Act of 1936 3801
 infection quarantine data on (Table) 68
 intake of adult 661
 miscellaneous composition of (Table) 634
 poisoning See also *Botulism*
 diff diag (Table) 240
 Salmonella 239
 staphylococci 153
 animal inoculation in (Table), 62
 preserved botulism from 311
 purine content of 2876
 supplies in typhoid epidemic, 227
 values effect of canning on 656
 effect of cooking on 656
 Foot bath 3700
 mustard in common cold 393
 technic 3192
 care of in peripheral vascular disease 997
 deodorants prescription 3143
 dermatoses of diff diag (Table) 3206
 exercises 3760
 fibrositis 2896
 fractures 3052
 hollow 3087
 immersion 1002
 and mouth disease 437
 diff diag (Table) 422 3218 3267 3294
 neutralization test in 69
 oral manifestations 1673
 (Fig) 1672
 serologic test in (Table) 59
 normal 3076
 (Fig) 3077
 pain in diff diag (Table) 2909
 powder U S Army prescription 3129
 prognosis of 3118
 ringworm of 3 98
 (Fig) 3291
 strain strapping in (Fig) 3079
 trench 1002
 tuberculosis of 2945
 weak, 3078
 congenital, 3085
 lump in (Table) 2737
 spastic 3093
 Footwear sterilization of 3308
 Foramen ovale patent, 936
 Forceps delivery 2694
 (Fig) 2693 2699

- Forceps delivery indications** 2694
 technic 2695
 Simpson's (Fig) 2625
Fordyce disease 1684
 diff diag (Table) 3267
 (Fig) 1684
Forearm fracture of 3026
 protection in (Fig) 2998 2999
Forehead prominence diff diag (Table) 3506
Foreign bodies in bladder 2304
 in conjunctival sac 3983
 in digestive tract 3985
 (Fig) 3985
 in ear 3984
 in esophagus 1793 3094
 in eye 1572
 corneal = moval 1556
 examination for 3625
 removal, 1555
 intra-ocular removal 1558
 in nose 3984
 diff diag (Table) 3390
 manifestations 3016
 in rectum 1913 3985
 in respiratory passages 3984
 in stomach 1807
 (Fig) 1807
 in stridor diff diag (Table) 273
 in throat 3084
 in vagina 2534
 in wounds 3983
 protein therapy in eye diseases 1552
 in dermatitis herpetiformis 33,2
 in osteo-arthro in 2361
 in uveitis 1630
Forest spm g disease 445
Form function and relationship 6
 sense disturbances diff diag (Table) 1335
 examination for 1535
Formaldehyde group uses 3119
 poisoning clinical manifestations (Table)
 749
 diagnosis (Table) 749
 occupations susceptible to (Table) 749
 treatment (Table) 749
Formol gel test 1949
Formula milks in infant feeding 2754
 preparation in infant feeding 2753
Forward failure 920 See also Shock
 in coronary oculus on 985
 treatment 987
 in gas gangrene (Table) 954
 treatment serum albumin in 11
 valvular defect predisposing to 97
Fourth disease 418
 diff d g (Table) 174 180
 rash in diff d g (Table) 172
 symptoms other than rash in diff diag
 (Table) 2790
Fowler's solution 125
 in granuloma fungoides 3387
 in lichen planus 3393
 in polycythemia 1025
 potent carcinogenicity of 3216
 in sarcoidosis 3272
 in scleroderma 3429
Fox Fordyce disease 3484
Fracture 2982
 aftereffects local, 2986
 anesthesia local in, 2990
 Fractures of ankle 3018
 of arm clinical manifestation (Table) 3014
 treatment (Table) 3014
 of articular facets 3010
 of atlas 3007
 of axis 3007
 Bennett's 3035
 birth deformity in diff diag (Table) 2954
 of carpal scaphoid 3038
 of cervical spine 3005
 of cheek bones 3013
 classification 2982
 of clavicle 3016
 splintage in (Fig) 2974
 closed definition 2983
 of coccyx 3012
 Colles 3030
 (Fig) 3028 3029 3050 3031 3032
 complete definition, 2983
 compound definition 2983
 congenital 2631
 crush treatment (Fig) 3011
 Watson-Jones reduction in (Fig) 3010
 delayed union in 2988
 during delivery 27,7
 of dorsal spine 3009
 of elbow 3021
 protection in (Fig) 2998 2999
 of extremities lower clinical manifestations
 (Table) 3038
 upper clinical manifestations (Table) 3014
 treatment (Table) 3014
 of face 3013
 treatment (Table) 3004
 factors predisposing to 2982
 of femur 3037
 clinical manifestations (Table) 3038
 treatment (Table) 3038
 of foot 3052
 exercise after 3001
 of forearm 3026
 protection in (Fig) 2998 2999
 of greater tubercle osteitis 3018
 of hand 3034
 heal (Fig) 2987
 hyperphosphatemia in diff diag (Table)
 727
 mechanism 2987
 of humerus 3018
 in cast in (Fig) 3000
 intercondylar 3023
 supracondylar 3022
 transcondylar 303
 immobilization in (Table) 981
 in de ce 293
 in complete definition 2983
 of internal semilunar cartilage (Fig) 2961
 of jaws 3013
 treatment (Table) 3004
 joint diff diag (Table) 2910
 motion in 3000
 of knee 3045
 of leg exercise after 3001
 (Fig) 3047
 treatment (Table) 3038
 of lumbar spine 3009
 transverse processes 3010
 malpractice suits in 2989
 management 2984
 (Table) 2984

- Fractures of mandible 3013
 emergency treatment, 1692
 of maxilla 3013
 mechanism 2983
 medicolegal aspects 2989
 of metacarpals 3034
 (Fig) 3036
 of neck 3003
 nonunion in 2988
 of nose 3013
 (Fig) 3013
 of os calcis 3052
 of patella, 3045
 pathologic diff diag (Table) 2848
 of pelvis 3003 3011
 treatment (Table) 3005
 of phalanges 3037
 physical examination in 2989
 physiotherapy in 3002
 plaster removal in, 2999
 Pott's 3018
 treatment (Table) 3039
 of radius 3027
 (Fig) 3026
 reduction open 2998
 (Table) 2984
 roentgenographic control in 2990
 of sacrum 3012
 of scapula 3017
 of shoulder girdle manifestations (Table) 3014
 treatment (Table) 3014
 simple definition, 2983
 of skull, 1430
 of spine 1453 3003
 first aid in 3005
 transportation in, 3005
 (Table) 3004
 thorax treatment (Table) 3004
 of thumb 3035
 of toes 3033
 treatment, 2990
 types 2983
 of ulna 3026
 (Fig) 3026
 of vertebrae lateral articular facets of 2970
 of wrist, 3023
 Fracture-dislocations 2983
 Fragilitas ossium diff diag (Table) 2879
 unguim 3458
 Fragility red corpuscles test for 3706
 Frambesia, cutaneous manifestations (Table) 3246
 diff diag (Table) 3218
 methods of diagnosis (Table) 3246
 tropica 351 See also *Yaws*
 diff diag (Table) 3409
 Francis test for pneumococcal antibodies 202
 Freckles 3173 3267
 Freezing effect on food values 637
 Frei test in lymphopathia venereum 472
 technic, 473
 Freiberg's disease 2929
 (Fig) 2929
 Freiberg-Köhler's disease lump in (Table) 2736
 Fremitus in backward failure 943
 examination 3544
 Frenum ulcer of in pertussis 282
 Fresh air treatment of tuberculosis 270
 Friction 3768
 Friction blister 3164
 burn 3164
 diff diag (Table) 316°
 dermatosis from diff diag (Table) 3134
 prolonged, cause of malignancy 3168
 rub 3541
 in acute pleuritis 2220
 diff diag (Table) 3543
 in pericarditis 1007
 Friedländer bacillus 323
 colony in 139
 infections diagnosis by smear in (Table) 50
 penicillin in 111
 streptomycin in 328
 sulfonamides 9°
 lobar pneumonia 2176
 pneumonia 2192
 Friedman pregnancy test 2498
 (Fig) 2498
 technic 2497
 Friedreich's spinal ataxia 1415
 (Fig) 1416
 nystagmus in 1415
 spasticity in (Table) 2737
 Frigidity definition 1504
 diff diag (Table) 2491
 Frog reaction to morphine 3339
 test for early pregnancy (Fig) 2619
 Fröhlich's syndrome 1166
 epiphyses in diff diag (Table) 2930
 intracranial signs 1168
 obesity 1167
 skeletal changes 1167
 treatment, 1169
 From Nonne syndrome 1430
 Frontal lobe reaction pattern, 1445
 tumor ophthalmic manifestations 1584
 sinuses anatomy 2393
 sinusitis acute 2126
 Frostate 3173
 diff diag (Table) 3162
 treatment, 3982
 Frozen food, values 657
 shoulder 2596
 Fructose source 588
 Fructosuria, diff diag (Table) 3077
 Fruits carbohydrates in (Table) 618
 classification (Table) 649
 composition (Table) 648
 food value of 645
 in infant feeding 2753
 Fucidin, dosage 193
 in leishmaniasis 631
 in intestinal distomiasis 1629
 in schistosomiasis 638
 Fuchsian, basic preparation 49
 Fugue definition 1308
 Fullness epigastric, 1769
 Fumigacin (Table) 103
 Fumigatin (Table) 103
 Function, era of 6
 and form relationship 6
 impairment after inflammation, 12
 restoration of 3753
 Fundus of eye determination of level in 3631
 examination of 1513 3629
 (Fig) 3630
 in hypertension, 203
 Fungating eruptions, due to drugs 3333

- Fungi causing disease** 40
 cultivation, 433
 diff diag (Table) 437
 infections, 433 5233
 fever in (Table) 46
 leukocytosis in, diff diag (Table) 1097
 penicillin in, evaluation, 111
 sulfonamides in, 93
- Fungicides** 3307
 benzoic acid as, 3114
 sodium thiosulfate as, 3123
 thymol as, prescription, 3125
 Whitfield's ointment as, 3136
- Furunculosis** 2161
 gonorrheal 4166
- Fururaceous impetigo** 3232
- Forstenberg diet** 632
- Furuncles** 3219 3267
 diff diag (Table) 3331 3368
 (Fig) 3447
 phenol for 3133
 treatment 3971
- Furunculosis, acriflavine in** 3118
 of auditory canal 2111
 diff diag (Table) 3306
 discharge in, diff diag (Table) 2150
 of lung 2212
 diff diag (Table) 404
 nasal 2103
 diff diag (Table) 2110
 of vulva, 2305
- Fusopurulent infections, of mouth** 1693
 septicemia, 353
- Fusopurulent infections** 322
 diagnosis by smear in (Table) 50
 treatment, 336
- GARTNER'S ducts, cysts of** 2347
- Gag reflex, absence of in hysteria** 3529
- Gait staccato, in myxedema** 1194
 disturbances in adult, diff diag (Table) 2496
 in childhood diff diag (Table) 2736
 in infancy causes (Table) 2737
 normal 3077 3493
 (Fig) 3077 3493
 propulsion in paralysis agitans 1506
 waddling in cerebral palsy 1455
 waddling in muscular dystrophy 2881
- Galactose in infancy dosage in tolerance test** 2745
 source 688
 tolerance test, 1949
- Galactosuria, diff diag (Table) 367**
- Gallbladder anatomy** 3558
 carcinoma, 1995
 congenital abnormalities, 1995
 (Fig) 1995
 Courvoisier in pancreatic cancer 1913
 disturbances, 1993
 in brucellosis, 315
 roentgenography in, 1988
 empyema 2009
 in brucellosis, 315
 examination, special, 1987
 functions, 1986
 gangrene 2003
 hydrops 2006
 infection, 2007
- Gallbladder infection in cholelithiasis** 2001
 inflammation, 2003
 mechanical lesions 2006
 papillomas 1995
 Phrygian cap of (Fig) 1993
 removal persistence of symptoms, 1992
 strawberry 1997
 (Fig) 2003
 treatment special methods, 1939
 tumors benign, 1995
 malignant 1995
 in typhoid fever 219
- Galloping consumption** 2176 2189
- Gallstones** 1997
 etiology 1997
 (Fig) 1998, 2001
 pregnancy and, 2075
 roentgenologic findings 2000
 surgery indications for 2003
 treatment, 2202
 medical, 2003
- Galvanic test** 2013
 therapy in eye disorders, 1550
- Galvanism oral** 1890
 (Table) 3792
- Galvanometer oscillograph, description** 202
 string description, 202
- Gambian trypanosomiasis** 631
- Ganglion** 2902
 diff diag (Table) 2955 3210 3296
- Ganglionectomy sympathetic, in Raynaud's disease** 1002
- Ganglionoma (Fig) 2082**
 medullary 1265
- Gangrene** 3293
 definition, 3104
 gas See Gas gangrene
 in peripheral vascular disease 995
 prevention in peripheral vascular disease 997
 in Rocky Mountain spotted fever 379
 of scrotum 2460
 treatment, in thrombo-angitis obliterans, 1031
- Gargapata disease** 337 See also *Relapsing fever*
- Gargophylus** 1413
- Garlic effect on muscle** 3383
- Gas gangrene** 309
 animal inoculation in (Table) 62
 antitoxin in, 301
 evaluation 83
 clinical manifestations 300
 Clostridia in 300
 culture (Table) 64
 cutaneous manifestations (Table) 5246
 diagnosis, 300
 by smear in (Table) 60
 forward circulatory failure in (Table) 91
 prevention 300
 roentgen therapy in 302
 surgery in, 301
 treatment, 300
- Gas gangrene-tetanus antitoxin, dosage** 297
- Gas(es) poisoning, diff diag (Table) 710**
 poisoning, 744
 psychoses due to 1583
 therapeutic 3326
 carbon dioxide, 3329
 helium, 3331
 oxygen, 3327

- Cas war 745
 Gasserian ganglion irritation 148
 Gastrectasis definition 1769
 Gastrectomy 1759
 mortality in 1760
 subtotal 1760
 indications for 3994
 Gastric See also *Stomach*
 acidity determinations (Fig) 3724
 histamine test in 1744
 analysis 3722
 in infancy indications 3739
 antacids 1754
 atony definition 1769
 carcinoma 1816
 diff diag 1786
 gastric contents in (Table) 3706
 (Table) 1797
 contents acidity in 3722 3723
 tests for 3723
 aspiration 1751
 Boas-Oppler cells in 3722 3725
 (Fig) 3725
 examination 3723
 chemical (Table) 3722 3723
 macroscopic (Table) 3722
 microscopic (Table) 3722 3725
 in gastric cancer (Table) 3726
 by drochloric acid in 3722 3723
 in hyperchromic anemia (Table) 3726
 lactic acid in 3725
 microscopic examination 3725
 normal (Table) 3726
 tests 3721
 tubercle bacilli in 3726
 in ulcer (Table) 3726
 diet bland 606
 distention acute postoperative 4012
 disturbances constipation in diff diag
 (Table) 1852
 diarrhea in diff diag (Table) 1840
 glossary 1708
 drainage in paralytic ileus 4010
 (Fig) 4011
 ferments 1755
 gavage 1752
 juice 3721
 (Fig) 3724
 microscopic view (Fig) 3725
 lavage 1749 1751
 medication 1753
 motility Ewald's test for 3721
 mucin dosage 1750
 mucosa ectopic 1865
 neuroses 1767
 diff diag 1786
 (Table) 1787
 hypertrophic 1773
 hypostrophic 1777
 treatment 1775
 preparations in pernicious anemia 1082
 protectives 1756
 resection 1750
 retention postoperative diet in 687
 preoperative diet in 681
 secretion 1740
 stimulants 1756
 surgery 1758
 postoperative measures 1760
 preoperative care 1758
 Gastric syphilis 1766
 tabes 1767
 test meals 1744 3721
 ulcer See also *Peptic ulcer*
 (Fig) 1782 1785
 gastric contents in (Table) 3726
 Gastritis acute 1808
 atrophic 1810
 chronic 1810
 edentate 1680
 hypertrophic (Fig) 1745
 in infancy diff diag (Table) 2750
 in periarthritis nodosa 1028
 phlegmonous 1813
 syphilitic 1766
 Gastrointestinal disturbances abdominal rigidity in diff diag (Table) 1746
 hematemesis in diff diag (Table) 1:64
 surgery postoperative complications 1761
 measures 1760
 Gastro-enteritis acute 231 1878
 climatic 480
 endemic 480
 Gastro-enterologist 3901
 Gastro-intestinal contents examination 3741
 disturbances incontinence in diff diag (Table) 1305
 somnolence in diff diag (Table) 1309
 hemorrhage electrocardiogram in (Fig) 817
 in periarthritis nodosa, 1028
 musculature stimulation by pitressin, 1179
 neuroses reflex 1000
 tract bacteria of 148
 in arsenical therapy 126
 flora of 149
 Gastrojejunostomy 1759
 Gastroparesis 1808
 (Fig) 1740 3189
 Gastrorrhaphy 1753
 indications for 3993
 Gastrotomy 1759
 indications for 3993
 Gastrotomy 1758
 Gaucher's cells 1133
 disease 1133
 pinguecula in 1598
 Gavage gastric 1752
 Gee's disease See *Celiac disease*
 Gehring pessary technic of introduction (Fig) 2540 2543
 Gerbäck's syndrome See *Polycythemia*
 Gellhorn pessary 2543
 Gentiana atrophic in *Simmonds disease* 3172
 dermatoses diff diag (Table) 290
 female absence 2530
 anatomy 3612
 examination 3616
 external (Fig) 3614
 fistulas 2544
 (Fig) 2545
 herpes 491
 hyperplasia in *Friedrich's syndrome* 1167
 in infancy examination 2733
 male anatomy 2393 3631
 examination 3640
 (Fig) 2395
 vessels 2397
 syphilis 337 2611
 tuberculous 2610

- Genito-urinary disturbances, zoonosis in, diff diag (Table) 1303
- Gentian violet, as antihelmintic, 1825 (Table) 1829
- prescription in gingivitis, 1639
- in skin diseases, 3119
- in staphylococcal infections, 154
- in streptococcal infections, 165
- in thrush, 2122
- Geotrichosis, 50
- Gerhardt's urine test, 3650 (Fig.) 3672
- German measles, 417 See also Rubella.
- Germania, in pemphigus, dosage 3403
- Gerson-Saverbruch Hermannsdorfer diet in tuberculosis, 269
- Ghon tubercle, 236
- Giant cell tumors bone 2340
- (Fig.) 2339
- diff diag (Table) 2336
- swelling in, diff diag (Table) 2333
- mole, 3205
- Giardia lamblia, 1592
- differential characteristics (Table) 3733 (Fig.) 1802
- Giardiasis, 1892
- alabrum in, 321
- diagnosis by smear in (Table) 50
- Gigante tend (Table) 103
- Gigantism, 1153
- acromegaly with, 1138
- diff diag (Table) 692
- (Fig.) 1156
- in newborn, 27-8
- classification disturbances in, diff diag (Table) 27-28
- treatment, 691 1159
- Gilchrist's disease 493 See also Blastomycosis
- Gingivae, burr-like deposit in (Fig.) 1675
- Gingivitis, 1673
- diff diag (Table) 1701
- due to dilantin (Fig.) 2845
- scurvy (Fig.) 2252
- granularum (Fig.) 1675
- traumatic 1690
- ulceromembranous (Fig.) 1698
- Gingivostomatitis, 434
- Gil's weight height-age tables for 3482 3483
- Gland. See oyster gland involved.
- Glanders, 22
- animal inoculation in (Table) 62
- conjunctivitis, 1623
- culture in (Table) 54
- cutaneous manifestations, 32-3 (Table) 3246
- diff diag (Table) 47
- effect of ulfonamides on III (Table) 3246
- methods of diagnosis, 3246
- ocular manifestations, 1603
- rash in, diff diag (Table) 3290
- serologic test in (Table) 39
- skin test in, 327 (Table) 69
- Glandular atrophy from hormone administration, 1150
- fever 466
- in leuremia, 324
- Glass-arm, 2932
- Glasses See Lenses
- Glauber's salt, 1830
- Glaucoma, 1573
- acute diff diag (Table) 1618 (Fig.) 1350
- iridectomy for 1556
- chronic, 1591
- capping of disk in (Fig.) 1350
- simple, Elliott trephine operation in, 1559
- congestive 1591
- intra-ocular tension, elevation, 1560
- massage for 1550
- primary 1578
- secondary 1591
- Lagrange operation for 1539
- simple, 1579
- Gleet, 2339
- Glenard's disease, 1603
- (Fig.) 3452 3459 3491
- Glossitis, calcified (Fig.) 1621
- classification, 1419
- of eye (Table) 1566
- Glossitis (Table) 103
- Globin insulin, 1240
- Globulin fraction in treatment of mea. in, 81
- gammag in preven von of jaundice, 1790
- in spinal fluid, test for 3730
- interpretative, 5735
- Glomerulitis diffuse acute 2367
- diff diag (Table) 2366
- Glomerulonephritis, acute 2373
- cardiovascular disturbances in, 23 6
- diff diag (Table) 2365
- edema in, 23-6
- electrocardiogram in (Fig.) 27 83
- electrocardiographic changes in, 603 (Fig.) 27 83
- in endocarditis 10-2
- etiology 2374
- extra-renal lesions 2375
- pathology 23-3
- treatment, 23-9
- chronic 2379
- cardiac hypertrophy in, diff diag (Table) 2368
- diff diag (Table) 2363
- edema in 07
- (Fig.) 2390
- hypertensive cardiovascular stage 2363
- malignant type 2381
- diuretic drugs in, 2386
- a perarteritis nodosa, 1028
- a scarlet fever 179
- systolic hypertension in, diff diag (Table) 910
- treatment, 2330
- Glomerulosclerosis, diabetic 23
- intercapillary 27-2
- Glomerulus, amyloid degeneration in (Fig.) 8
- Glossitis tumors 1435 3207
- diff diag (Table) 3 50 3.94
- (Fig.) 3201
- of nails, 3454
- Glossitis 3293
- Glossary of gastric disturbances 1 63
- Glossotomy indications for 3394
- Glossoma moritans in rhodesian trypanosomiasis, 531
- palpals in gambian trypanosomiasis 331
- Glossinidae as vector (Table) 42
- Glossitis, 1 67

- Glossitis Hunterian 1676 (Fig) 1671
 in niacin deficiency (Fig) 624
 rhomboides mediana, 1707
 traumatic 1690
 Glossodynia 1687
 Glossopharyngeal neuralgia 1488
 paralysis 1488
 Glossotomy indications for 3993
 Glottis angioneurotic edema of diff diag
 (Table) 2733
 spasm of in tetany 725
 Glucogenesis 592
 Glucose in blood (Table) 5
 effect on insulin production 589
 in hypoglycemia, dosage 1241
 source 588
 tolerance test 1949
 blood sugar curves in 3716
 technic 3716
 Glutamic acid in mental deficiency 1334
 Gluteal bursitis 2905
 Glycerin suppository 1830
 uses 3119
 Glycerite of tannic acid uses 3129
 Glycerol trinitrate 3893
 Glycocoll, evaluation, 3888
 in fatigue 2889
 Glycogen infiltration definition, 9
 Glycogenesis 1978
 Glycosuria benign 1262
 in coronary occlusion 985
 in diabetes mellitus 1249
 in plumbism 763
 renal positive Benedict test in diff diag
 (Table) 3676
 tests for 3673
 Glycotauro dosage (Table) 1048
 Gmelin test for bile in urine 3686
 Gnat as vector (Table) 42
 Goat fever 314 See also *Brucellona*
 milk anemia, 1088
 in infant feeding 2754
 Gout 1204
 belt 1218
 colloid 1219 1220
 endemic 1218
 cretinism and 1219
 iodide in 609
 prophylaxis 1219
 treatment 1219
 exophthalmic See *Hyperthyroidism*
 of pregnancy iodides and, 611
 region 1191
 simple See *Gout endemic*
 toxic nodular 1221
 Gold salts in lupus vulgaris 3265
 shock from 935
 skin reactions caused by 3310
 sodium thiosulfate in infancy dosage 2743
 in lupus erythematosus dosage 3396
 test of spinal fluid (Fig) 3737
 therapy in rheumatoid arthritis 2922
 in tuberculosis, 267
 Goldblatt kidney in hypertension 903 2273
 Golgi apparatus, 3
 Gonadal dysfunction in Addison's disease 1273
 cutaneous manifestations 3210
 oral manifestations 1674
 Gonadotropin, chorionic, in pregnancy 2626
 in cryptorchidism dosage, 2425
 Gonadotropin in hypogonadism 2525
 secondary 2417
 precocious sexual development in (Fig)
 2416
 Goniometry 2907
 Gonioscopy 1545
 Gonococcemia 219
 diff diag (Table) 192 3308
 joint pain in diff diag (Table) 2902
 Gonococcus 217
 complement fixation test for 221
 culture 220
 description 137
 (Fig) 47
 infections 217
 in children sulfathiazole dosage (Table)
 2583
 curatory disturbances in (Table) 954
 cutaneous manifestations (Table) 3216
 fever in diff diag (Table) 1006
 methods of diagnosis (Table) 3246
 penicillin in evaluation 110
 serologic test in (Table) 59
 skin test in (Table) 59
 streptomycin in, evaluation 111
 sulfonamides in, 92
 peritonitis 1930
 stomatitis 1696
 vaccine evaluation 222
 Gonorrhea 217
 clinical manifestations 218
 culture in 220
 (Table) 84
 diagnosis 219
 by smear in (Table) 50
 pregnancy and 2670
 prevention, 221
 treatment 221
 acriflavine in 3113
 mercury benzoate in 130
 silver in, dosage (Table) 155
 Gonorrheal cervicitis, 2601
 conjunctivitis silver nitrate in, 3127
 deferentitis 2466
 infections chronic 2600
 antis gonococcal vaccine in, 1541
 metastases 210
 ophthalmia 1621
 prophylaxis calomel ointment in 3122
 Army method, 3122
 Navy method 3122
 silver preparations in, 3127
 salpingitis chronic (Fig) 2600
 salpingo-oophoritis 2608
 urethritis 2338
 vulvovaginitis 2586
 diagnosis 2587
 treatment 2538
 Goodell's sign 2620 3618
 Goodpasture's peroxidase stain test 3707
 Gordon reflex (Table) 3584
 test, in Hodgkin's disease 1140
 Gout, 2367
 atypical 2875
 bone radiotranslucency in diff diag (Table)
 2306
 calcification in 10
 deformity in diff diag (Table) 2954
 dermatoses of diff diag (Table) 3210
 diet in 2876

- Gout, diff diag (Table) 192, 2310
fever in, diff diag (Table) 718
(Fig) 2372 2373
hyperuricemia in, diff diag (Table) 737
joint pain in, diff diag (Table) 2902
lumbago in, diff diag (Table) 3073
ophthalmic manifestations in, 1339
rheumatoid arthritis and, diff diag., 2918
roentgenographic findings in, 2573
skin in, 3211
therapeutic test in, 2373
Graafian follicle rupture of 2528
Gradenigo's syndrome, 1447 1649
in petrositis 2147
Graefenberg's intra-uterine ring, 2506
Grafts, 3032
(Fig) 3234
Graham Steell murmur in pulmonary insufficiency 974
Gram, food value, 642
stab 3193
(Fig) 3194
Gram's crystal violet, preparation, 49
stain, technic, 52
Gramicidin, pharmacology 103
(Table) 103
toxicity 103
Granulation removal, silver nitrate in 31.9
Granules, Babes-Ernst, 303
bacterial, 138
Granulocytes See *Leukocytes*
Granulocytopenia, 1038
primary splenic, 1100
in sulfonamide therapy 308
Granuloma annulare 3.35
diff diag (Table) 8 97 2360
(Fig) 3335
bone eosinophilia in, diff diag (Table) 547
coccioid, 3313
eosinophilic 2843
(Fig) 2843
fungoides 3386
diff diag (Table) 3162 3210 3218 3332
(Fig) 3383
pruritus in, diff diag (Table) 3170
stages in, 3386
Inguinale 475 2502
anal lesion in (Fig) 476
diagnosis by smear in (Table) 60
diff diag., 2593 3219
Donovan bodies in (Fig) 473
(Fig) 2592
lymphadenopathy in, diff diag (Table)
11 5
of penis, 2457
(Fig) 4.6
treatment, 477
antimony and potassium tartrate in,
dosage 133
fusid in, dosage L.3
paracoccidial 3314
pyogenicum, diff diag (Table) 3211 3 97
of nail, 3454
Granulosa cell tumor of ovary 2573
Granulosis rubra nasi, 3464
diff diag (Table) 3162 3267
Grass(es) allergy due to 2097
Berinda, geographic distribution (Fig) 560
vernal, geographic distribution (Fig) 560
Graves disease. See *Hyperthyroidism*.
Gravitation shock, 925
Grawitz, hypernephroma of 2327
Green, brilliant, in leprosy 277
soap uses, 3156
tint of face diff diag (Table) 3506
Greenstick fracture, 3028
treatment (Table) 3015
Grenade thrower's fracture, 2983
Grens rays, 1549
Grippe, 296. See also *Influenza*.
Grippe-like infection, choromeningitic, 449
Grocco's triangle in pleurisy with effusion 2222
Gross, lesion of in granuloma inguinale (Fig)
476
Growth bacterial 139
carbon dioxide for 140
media for 140
oxygen for 140
variability in, 141
bone, embryology 2793
histology 2793
cellular 6
cessation (Fig) 1178
decreased, diff diag (Table) 693
treatment, 692
deformities in elbow fracture, 3026
disturbances of 691
emotional and mental, in infancy 2727
hormone (Table) 1134
increased, diff diag (Table) 692
treatment, 691
■ type of bacterial growth 141
Guaiacol in tuberculosis, 271
Guillain Barre syndrome 46
Guinea pig injection in tuberculosis, 965
Gum boil, 1704
mastic test, 3737
Gumma in syphilis 334
types, 3286
of thigh (Fig) 338
of vulva (Fig) 338
Gums, carcinoma, 1718
disturbances, diff diag (Table) 1701
examination, 3596
fibroma, 1715
fibrosarcoma, 1717
gangrenous of scurvy (Fig) 629
lymphosarcoma, 1717 (Fig) 1718
Gutter fracture, 2983
Guyon position, 3566
Gynandromorphism. See *Hermaphroditism*
Gynecologic disturbances, abdominal rigidity
in diff diag (Table) 1747
anoperineal pain in, diff diag (Table)
1913
constipation in, diff diag (Table) 1853
pain in, left lower quadrant, diff diag
(Table) 1866
right lower quadrant (Table) 1880
swellings in, diff diag (Table) 1886
Gynecologist, indication for consultation 3655
Gynecology. See *Female reproductive system*
Gynecomastia, diff diag (Table) 2578
Gynergen, dosage, 2510 3383
in migraine, 1509
HABITUATION drug 3343
Habitus. See *Body type*.
Haff disease 1076

- Hair anatomy** 3500
atrophy 3440
bleaches chemicals in 3141
bleaching chemicals in 3141
curling preparations 3141
distribution abnormalities 3436
disturbances of 3435
dyes anemias due to 1090
chemicals in 3141
graying 3448
preparations 3141
straighteners chemicals in 3141
tonics evaluation 3141
- Halibut liver oil dosage** 620 621
- Halitosis** diff diag (Table) 1660
- Hallucination** definition 1293
- Hallucinoses** alcoholic acute 1396
- Hallux rigidus** 3088
valgus 3088
(Fig) 3089
- Halo saturninus** 1677
(Fig) 1675
- Ham test, in nocturnal hemoglobinuria** 1976
- Hammer toe** 3080
- Hand anatomy** 3973
care in infectious diseases 68
creams chemistry 3142
dermatoses of diff diag (Table) 3996
examination (Table) 3574
fractures 3034
treatment (Table) 3016
incisions for (Figs) 3975
infections 3973
treatment after 3978
lotions chemistry 3142
trigecanth prescription 3180
pain in diff diag (Table) 2908
pellagrous dermatitis of (Fig) 624
psoriasis of 3418
soaps chemistry 3142
syphilis of (Fig) 339
- Hand Schüller Christian syndrome** 1157
diff diag (Table) 1338
(Fig) 1154 1185
ophthalmic manifestations 1509
in xanthoma disseminatum 3244
- Hanging cast, in fractured humerus (Fig)** 3000
- Hangnail** 3463
- Hanot's curthons** See *Curthons biliary hypertrophic*
- Hansen bacillus** 273
disease See *Leprosy*
- Harelip** 1683
(Fig) 1684
- Harlequin fetus** 3182
- Hashimoto's disease** 1222
- Haverhill fever** 363
clinical manifestations 363
diff diag (Table) 3398
- Haverhillia multiformis** 365
- Hay fever** 2097
conjunctivitis 1630
(Fig) 1650
drugs in, 2093
grasses geographic distribution of (Fig) 260
prophylaxis 2098
- Hayem-Widal syndrome** 1064
- Hazards** occupational 4060
- Haziness** dustlike of vitreous (Table) 1892
- Head, disturbances of in adults** diff diag (Table) 3504
in infancy diff diag (Table) 2774
injuries 1450 3931
posttraumatic disturbances 1455
treatment 3932
physical examination 3303
shape abnormalities of diff diag (Table) 2774
size of infants (Table) 2727
vein prominence in infancy diff diag (Table) 2775
- Headache in azotemia**, 2278
bitemporal in cerebral aneurysm 1445
in brain tumor 1421
capsule prescriptions 1508
diff diag (Table) 1512
indurative 2896
management 1510
in sinusitis 2133
treatment, 1510
in hypertension 914
types 1511
violent in traumatic pneumocephalus 1454
- Hearing acuity** diminution, diff diag (Table) 2019
increase diff diag (Table) 2096
tests for 2015 3611
devices 2090
- Heart** See also *Cardiac*
action current 731
disorderly 897
regulation of 777
all or none response 773
anatomy 3545
aneurysm See *Aneurysm*
arborescence block, 880
arrhythmias of 873
electrocardiographic changes in 810
arteries 773
Aschoff body in 123
(Fig) 163
auricles anatomy 3546
fluoroscopic examination 790
auricular fibrillation 885
flutter permanent 884
(Fig) 841 814
paroxysmal 883
auscultation technic 3318
beats dropped, 887
missed 837
block auriculoventricular 679
complete 879
shock in 935
conduction in, 773
electrocardiogram in (Fig) 850
electrocardiographic diagnosis of 811
first degree 879
intraventricular 880
second degree 8 6
blood supply to 3517
bradycardia, 876
diff diag (Table) 877
brown atrophy 9
(Fig) 8
bundle branch block of 880
calcium and, 603
chambers fluoroscopic examination, 793
chemical controls 775
circulation of 773

- Heart, conduction, 773
 (Fig) 774
 contour 77
 in bronchial asthma (Fig) 724
 in emphysema (Fig) 724
 in hypertension (Fig) 726
 in interauricular septal defect (Fig) 720
 normal (Fig) 720, 723, 724
 in pulmonary fibrosis (Fig) 724
 contractility of 773
 contractions premax ure, 857
 electrocardiographic changes 810
 contusion of cause (Table) 965
 manifestations (Table) 963
 in coronary occlusion, 953
 cycle, 776
 dilatation, 772, 870
 in acute glomerulonephritis, 836
 diseases angina pectoris, 890
 congenital, 943
 blood pressure in, 953
 clinical manifestation, 951
 (Table) 954
 complications of 963
 diff diag (Table) 868, 954
 fluoroscopy in, 963
 prognosis in, 963
 roentgenogram in, 963
 treatment, 963
 types, 946
 coronary artery occlusion, 953
 insufficiency 830
 digitalis in, 846
 occupations in, 860
 pregnancy in, 864
 quinidine in 862
 surgery in, 863
 treatment, in thoda of 81
 water in, 87
 efficiency increase of in congestive failure, 940
 examination, 3348
 excitability of 77
 failure. See *Congestive heart failure*
 (Fig) 3345
 function, two-step exercise test, 789
 hemodynamics, 791
 in hypertension, 903
 hypertrophy of 807
 diagnosis 870
 diff diag (Table) 863
 manifestation, 863
 treatment, 870
 interauricular septal defect of 956
 cardiac contour in (Fig) 720
 electrocardiogram, 823
 intraventricular conduction defect of 850
 septal defect of, 977
 (Fig) 958
 law of, 780
 mechanics of, 780
 mitral stenosis, 946
 valve of hyaline vegetation of (Fig) 188
 thickening (Fig) 188
 vascularization (Fig) 188
 murmurs 349
 in congenital heart disease, 963
 description, 777
 (Fig) 3550
 functional, in damaged heart, 972
 murmurs in hyperthyroidism, 170
 in normal heart, 972
 muscle chemistry of, 774
 fatty (Fig) 8
 neoplasms of, 86
 nerves anatomy 3547
 function, 77
 neurones, 897
 output, 770
 pain, diff diag (Table) 899
 physiology 77
 position of in chest (Fig) 3529
 precordial pain, diff diag (Table) 899
 propagation of on chest wall, 3529
 pulsations, normal, 3529
 rhythm, 773
 abnormal, in digitalis intoxication, 861
 roentgenology 77
 size, 347
 sclerosis 897
 sounds, abnormal, 870, 3343
 aberrations in, diff diag (Table) 773
 basal, 77
 description 77
 first apical, 77
 fraction, 343
 normal, 3543
 aberrations in, diff diag (Table) 773
 (Fig) 343
 in pericarditis, 1009
 phonocardiography in, 801
 reduplications, 3543
 second apical, 77
 in shock, 831
 time relation in (Fig) 770
 systolic hypertension in, diff diag (Table) 910
 tachycardia, 874
 diff diag (Table) 870
 supraventricular electrocardiograms, 843, 849
 tamponade, 872
 tennis, 87
 thrill in congenital heart disease 963
 tours 772
 variations in (Table) 772
 transverse portion of electrocardiogram, diagnosis, 809
 in typhoid fever 829
 valves, arteriosclerosis of 99
 defects, congenital, 961
 physiology 77
 valvular defects, 967
 diff diag (Table) 863
 pregnancy and, 975
 prognosis, 974
 rheumatic, electrocardiogram in (Fig) 837 841, 843 845 846
 surgery and, 975
 (Table) 970
 treatment, 975
 ventricles, anatomy 3447
 fluoroscopic examination, 793
 vertical position of electrocardiographic diagnosis of, 809
 weight, 3547
 wounds, cause (Table) 963
 manifestations (Table) 963
 Hearburn, definition, 170
 diff diag (Table) 170

- Heat, dry application of 3787
 injuries due to 3169
 lamp (Fig) 3787
 luminous 3787
 (Fig) 3787
 moist, application of 3790
 in physiotherapy 3787
 (Table) 3786
 regulation, disturbances 20
 physiology 20
 shock prevention and 938
 stroke temperature 23
 treatment for eye diseases 1547
- Heberden's nodes 2858 2860
 (Fig) 2857
- Hebra's dermatosis See *Erythema multiforme exudativum*
 pityriasis rubra 3394
- Heel cord contracture, 3091
 painful 3090
 psoriasis (Fig) 3417
- Heel in axilla method in shoulder reduction 2073
- Heerfordt's uveoparotid fever 1635
- Hegar's sign in pregnancy 2620 3648
- Height, decrease in diff diag (Table) 691
 of infants (Table) 2727
 normal 3480
- Height weight age table for boys 3481
 for children, pre-school 3480
 for girls, 3482
 for men, 3483
 for women 3484
- Heiser mixture of chaulmoogra oil 277
- Heliotherapy 3704
 in joint tuberculosis 2947
 in psoriasis 3421
 in tuberculosis 270
- Helium 8831
- Helminthiasis 537
 antibiotics in 111
 asthenia in diff diag (Table) 2891
 bulimia in diff diag (Table) 1776
 of cutaneous tissues 3321
 diagnosis by smear in (Table) 50
 diff diag (Table) 241 3211 3219 3334 3379
 dyspepsia in diff diag (Table) 1771
 eosinophilia in diff diag (Table) 542
 fever in (Table) 20
 hepatic 1982
 intestinal, 1893
 treatment 1894
 varieties 1893
 list 537
 methods of diagnosis (Table) 3246
 of newborn diff diag (Table) 2782
 pruritus and in diff diag (Table) 1916
 in diff diag (Table) 3170
 pulmonary 2213
 diff diag (Table) 405
 sulfonamide in 23
 swellings in, diff diag (Table) 1750
 tarry stools in diff diag (Table) 1813
- Helminthics 1894 1898
- Helvolic acid (Table) 103
- Hemangioma (Fig) 3200
- Hemarthrosis 2810
 deformity in diff diag (Table) 2954
 diff diag (Table) 2810
- Hematemesis diff diag (Table) 1764
- Hematemesis differentiation from hemoptysis 2038
 emergency treatment 1763
 in Rocky Mountain spotted fever 39
- Hematidrosis 3463
- Hematinics in acute hemorrhage 109
 list 3897
- Hematocoele, pelvic 2560
 of testis 2431
- Hematochromatosis See *Hemochromatosis*
- Hematocrit determination normal values 35.8
 reading 3707
- Hematologic disturbances See *Blood diseases*
- Hematologist, 3901
- Hematology glossary of 4052
- Hematoma in infancy 2775
 peripenile, 2428
 perirenal 2303 2330
 saccular in fracture 2987
 of sternocleidomastoid muscle in infancy 2775
 subdural chronic, 1431
 subungual, 3153
 treatment (Fig) 3964
 treatment 2964
 in wounds postoperative 4005
- Hematomyelia 1440
- Hematopoietic disorders See *Blood diseases*
 principle 1038
- Hematuria in acute glomerulitis 2308
 in backward failure 944
 diff diag (Table) 2306
 in endocarditis 1022
 in erysipelas 169
 in food poisoning diff diag (Table) 249
 in glomerulonephritis 2377
 in plumbism, 763
 in polycystic kidney disease 2292
 in renal calculi 2315
 carcinoma 2337
 tuberculosis 2350
- Hemeralopia diff diag (Table) 1530
- Hemianopsia bitemporal in pituitary adenoma 1158
 diff diag (Table) 1615
 (Fig) 1539
 homonymous (Fig) 1642 1643
- Hemiatrophy 2534
 facial progressive 1431 3231
- Hemicellulose function 698
- Hemicephaly 1407
- Hemihyper trophy 2831
- Hemiparesis after encephalomyelitis, 143
- Hemiphalangectomy in bunion 3038
- Hemiplegia 1439
 predisposing to fracture 2933
 spastic, 2748
 (Fig) 2749
 infantile 1455
- Hemochromatosis 1978
 of adrenal cortex 1279
 diff diag (Table) 3242
 ophthalmic manifestations 1599
 pigmentation in 9
 skin in 3241
- Hemodynamics of circulation 781
- Hemoglobin in blood (Table) 5
 check, in sulfonamide therapy 102
 normal value (Table) 1016
 variations in 1041

- Hemoglobin, saturation of erythrocytes, 3705
 standards (Table) 3625
 test, in infancy 739
 normal values (Table) 3622
 technic, 634
- Hemoglobinemia diff diag (Table) 1038 1074
- Hemoglobinometers, different standards in (Tabl) 3635
- Hemoglobinuria, 1073
 diff diag (Table) 2306
 due to transfusion, 1074
 epidemic 1076
 diff diag (Table) 1037
 march, 1076
 nocturnal paroxysmal 1075
 paroxysmal due to cold, 1075
- Hemogram Schilling 3704
 in familial hemolytic anemia, 1062
- Hemolymphangoma, 1104
 (Fig) 3200
- Hemolysin, bacterial, virulence and, 145
 list, 3307
- Hemolysis acute, leukocytosis in, diff diag (Table) 1077
- Hemolytic anemias, 1060 See also Cooley's anemia, Erythroblastosis foetalis Hemoglobinemia, Hemolobinuria, Target Cell anemia
 acquired, 1064
 acute, 1073
 bone marrow count in (Table) 1043
 diff diag. (Table) 1038 1060
 familial, 1060
 (Fig.) 1063
 in malaria, 109
 secondary 1064
 sickle cell, 1063
 symptomatic, 1064
- jaundice 1051
 differentiation from endocarditis 1063
 from gallbladder disease 1063
 splenectomy in 1063
- streptococci, colony in, 139
 virulence, 145
- transfusion reaction, 1074
- Hemometer Sahli-Hellge (Fig) 3624
 types 625
- Hemopericardium, cause (Table) 963
 manifestations (Table) 968
- Hemophilic infections with, 278
 list, 38
- Hemophilus 1118
 diff diag (Table) 1087 1112
 fibrin film in, 8
 joint pain in, diff diag (Table) 2303
 oral, 1677
- Hemophilus ducreyi, 239
 infection, 2588
 penicillin in, 111
 streptomycin in, 111
 sulfonamides in, 111
- influenzae, 278 283
 bacteriology 285
 colony in, 139
 infection, 285
 Neufeld test in 287
 treatment, 287
 pneumonitis 2190
 pertussis, 278
 (Fig) 133
- Hemophilus pertussis, penicillin in, evaluation 111
 streptomycin in, 111
- Hemoptysis in backward failure, 948
 in bronchiectasis, 2061
 diff diag (Table) 2053
 differentiation from hematemesis 2058
 in laryngeal tumor 2072
 in pulmonary carcinoma, 2073
 in tuberculous pneumonitis, 2003
- Hemorrhage abdominal pain in, diff diag (Table) 2731
 acute, 1057
 anemia from, 1057
 diff diag (Table) 1059
 leukocytosis in, diff diag (Table) 1097
 capillary in scurvy (Fig) 628
 cerebral, 1439
 coma in, management, 1442
 diff diag (Table) 1437
 differentiation from thrombosis, 1441
 fontanelles in diff diag (Table) 2729
 in hypertension, 907
 chronic, 1059
 epidural, 1453
 gastro-intestinal, diff diag (Table) 1764
 electrocardiogram in (Fig) 817
 hypopyrexia in (Table) 2
 intracranial, in infants, 2773
 intraventricular 1441
 meningeal, 1448
 in peptic ulcer 1783
 indications for surgery 1794
 perforation and, 235
 postoperative, treatment, 4007
 postpartum, 2717
 preretinal, in leukemia, 1633
 retinal, 1637
 retroperitoneal, in peritonitis nodosa, 1023
 in Rocky Mountain spotted fever 379
 in ruptured tendon, 2952
 shock in, 834
 splinter in endocarditis, 1023
 subarachnoid, 1445 1448 1454
 diff diag (Table) 1437
 fontanelles in, diff diag (Table) 2729
 subcortical, 1454
 subdural, 1453
 in infancy 2775
 type diet in, 1052
 in typhoid fever 234
 of unknown cause 1123
 visceral, in infancy 2775
 vitreous, 1639
 in diabetes mellitus, 1639
 symptoms (Table) 1571
- Hemorrhagic capillary toxicosis, 1121 3424
 joint pain in, diff diag (Table) 2303
 diatheses, 1163
 diseases, diff diag (Table) 1112, 3219 See also Blood diseases
 of newborn, 1111
 diff diag (Table) 1037 2782
 prevention, 2742
 treatment, 1113
 glomerulonephritis in scarlet fever 179
 infarction of lung (Fig) 13
 jaundice of vitamin K deficiency (Fig.) 618
 smallpox, 426
- Hemorrhoids, etiology (Table) 969

- Hemorrhoids external 1916
 thrombosed 1916
 incision 3917
 (Fig) 1908
 internal 1917
 injection technic 3946
 (Fig) 3946
 prevention 1910
 replacement, 1910
 in right heart failure 944
 tannic acid in 3129
 Hemorrhoidectomy 3947
 indications for 3994
 technic (Fig) 3948
 Hemosiderin in back ward failure 943
 Hemosiderosis 1975
 Hemostasis 3959
 in acute hemorrhage 1057
 in chronic blood loss 1060
 local chromium trioxide in 3117
 Hemostatics uterine 2512
 Hemothorax diff diag (Table) 2032
 Hemp water geographic distribution of (Fig) 580
 Henoch-Schonlein purpura 1121 3424
 differentiation from infectious arthritis 2907
 Heparin 1050
 vs dicoumarin 1052
 pharmacology 1050
 therapeutics 1050
 toxicity 1051
 Heparinization in arterial occlusion 999
 in cerebral thrombosis 1444
 in coronary occlusion 988
 in endocarditis 1021 1024
 in infancy 2742
 in phlebothrombosis dosage 1125
 in pulmonary embolization, 2090
 in pyelephlebitis 1961
 in retinal vein obstruction 1590
 subcutaneous implants Loewe's method 1061
 Hepatic. See also Liver
 amyloidosis 1978
 cells function 1946
 cirrhosis 1969
 diabetes 1247
 distoniasis 1982
 disturbances See Liver disturbances
 fever intermittent 2004
 insufficiency 1933
 blood cholesterol in 738
 diff diag (Table) 736
 hypoglycemia in diff diag (Table) 734
 rickets 1953
 syphilis 1965
 Hepatitis arsenical 1964
 electrocardiographic changes in 808
 electrocardiogram after (Fig) 827
 infectious 1979
 pain in right upper quadrant in, diff diag (Table) 1959
 toxic 1963
 etiology 1963
 laboratory data in 1966
 pathologic physiology 1963
 in sulfonamide therapy 961 1964
 treatment 1967
 Hepatojugular reflex in right heart failure 942
 Hepatolenticular degeneration, 1977
 diff diag (Table) 1954
 Hepatomegaly diff diag (Table) 1973
 Hepatoptosis 1956
 Hepatorenal syndrome 1968
 Hepatotropic viruses 589
 Heredity in arteriosclerosis 978
 hypertension and 900
 Heredosyphilis tardive 2791
 Hering Breuer reflex 2018
 Hermaphroditism 2531
 true 2531
 (Fig) 2532
 Hernia 1799 3091
 congenital with hydrocele (Fig) 2492
 diagnosis 1801
 diaphragmatic 3093
 clinical manifestations (Table) 2047
 hiatus 1803
 (Fig) 1802
 incarcerated 1800
 inguinal diff diag (Table) 3093
 irreducible 1800
 para-esophageal 1803
 strangulated 1800
 truss in (Fig) 3094
 treatment 1801
 types 1799
 umbilical complicating pertussis 282
 Herniation of bladder 2303
 through ligament of Treitz 1804
 Herniorrhaphy 1801 3093
 constitutional factors in 1801
 indications for 3095
 Heroin dosage (Table) 3855
 Herpes diff diag (Table) 422
 febrilis 433
 in lobar pneumonia, 2179
 genitalis 434
 labialis 1673
 (Fig) 1671
 progenitalis 2457
 rash in diff diag (Table) 3290
 simplex, 433
 diff diag (Table) 3274
 of face diff diag (Table) 3267
 (Fig) 436
 of lip (Fig) 3289
 in meningococcemia 211
 of penis (Fig) 3289
 of vulva 2592
 solaris 3175
 zoster 436
 chickenpox and, 420
 diff diag (Table) 3250
 of ear 2112
 diff diag (Table) 3306 3608
 (Fig) 436
 ocular manifestations 1606
 ophthalmicus diphtheria antitoxin in dos age 1651
 oral manifestations, 1673
 of oropharynx diff diag (Table) 2113
 peripheral nerve involvement, diff diag (Table) 1461
 pitressin for relief of pain 1179
 of shoulder (Fig) 3239
 of vulva, 2599
 Herpetic fever 454
 Pharyngitis 434 2157

- Herpesiform lesions (Fig) 3289
 Hertel exophthalmometer 1546
 Herxheimer reaction 3281
 in massive do *n* arsenotherapy 31
 Heterochromia definition, 1562
 Heterophoria 1530
 diff diag (Table) 1531
 Heterophyes heterophyes 1893
 Heterotropia 1529
 diff diag (Table) 1531
 Hexestrol dosage (Table) 2515
 Hexylresorcinol 1895
 (Table) 1899
 Hiatus hernia 1803
 (Fig) 1802
 Hiccough in brain tumors 1423
 definition 1772
 diff dia (Table) 1933
 postoperative 4009
 treatment 4009
 Hiccuped face diff diag (Table) 3509
 Higoumenaki sign in prenatal syphilis 3287
 Hip dislocation 2978
 ab normal motility in diff diag (Table)
 2808
 congenital 2823
 (Fig) 2828 2829
 lump a d (Table) 2736
 treatment (Table) 2977
 examination (Table) 3 74
 fracture 3037
 treatment (Table) 3038
 pain in diff diag (Table) 2808
 snapping 2963
 swellings in diff diag (Table) 2826
 tuberculo is 2340
 (Fig) 2344
 Hippocratic facies diff diag (Table) 3809
 fingers See *Clubbed finger*
 Hippuric acid synthesis test 1949
 Hippus 3624
 diff diag (Table) 1534
 Hirshsprung's disease 1871
 (Fig) 1871
 Hirsuties 3437
 facial in Cushing's syndrome 1161
 Hirudi 3190
 in l prosy 277
 his stain technic 22
 Histaminase 3891
 Histamine 3890
 cardiovascular action 3891
 cephalgia 1510
 effect on muscle 3888
 headache 3892
 in multiple sclerosis dosage 1505
 pharmacology 3891
 preparations 3891
 solutions 3891
 test for gastric acidity 1741 389
 toxicity 3892
 in urticaria dosage 3349 3352
 wheal 713
 Histamine-like substance 784 785
 in edema 713
 in shock 929
 Histocytosis lipo d 1134
 Histoplasmosis 504
 lymphadenopathy in, diff diag (Tabl) 1136
 in uterization te t in, 59
 Histoplasmosis serologic test in (Table) 59
 History taking 3469
 cathartic value 3475
 clinical of infant 2726
 family history 3472
 past history 3475
 present illness 3471
 role of physician in 3470
 way of life 3473
 Histotoxic anoxia 3927
 Hives See *Urticaria*.
 Hoarseness in acute laryngitis 2161
 diff diag (Table) 2160
 in laryngeal tumor 2010 2072
 Hodge pessary 2510
 Hodgkin's disease 1138
 diff diag (Table) 405
 eosinophilia in diff diag (Table) 842
 (Fig) 1139
 irradiation in 1033
 lymphadenopathy in diff diag (Table)
 1136
 Hollow foot 3087
 Homatropine dosage (Table) 3375
 Home delivery contraindications 2677
 Homogenized milk, 636
 Homologous serum jaundice 83
 Homosexuality 2412
 definition 1803
 diff diag (Table) 2491
 Honey in infant feeding 2753
 Hookworm dermatitis 3195
 disease 1903
 epidemiology (Fig) 1904
 iron tetrachloride in 1807
 hexylresorcinol in 1895
 tetrachlorethylene in 1895
 life cycle 1904
 Hordeolum 1610
 necrosis 1556
 Hormodendrum pedunculata 3313
 Hormones adrenal cortical 1267
 p e p rations 1267
 therapeutics 1268
 anterior pituitary 1154 2519
 in lactation 2519
 preparations 1154
 antidiuretic 1180 1183
 assay in pregnancy 2626
 chemical composition 1148
 follicle stimulation 1154 2513
 growth 1154
 involuntary nervous system and, 1390
 maternal fetal organ stimulation by 2777
 ovarian See *Horm es steroid*
 parathyroid 12 4
 administration 1224
 therapeutics 1224
 pharmacology 38.5
 posterior pituitary 1178
 p eparations 1173
 therapeutics 1179
 recognized substances (Tabl) 1149
 resistance 1150
 st roid 2513
 stru tural formulas 2514
 testicular 2401 See also *Androgen*
 therapeutics 3825
 therapy 1147
 in eye diseases 1553

- Hormones therapy in fatigue 2889
 in hypertrichosis evaluation 3138
 in infancy dosage 2744
 thyroid 1188
 pharmacology 1188
 preparations 1189
 therapeutics 1190
 Horn cutaneous diff diag (Table) 3154
 Horner syndrome 1400 2776
 Hour glass contraction 1806
 H substance 784 785
 in capillary circulation 784
 Huddleson's brucellergun 317
 Human bites 3108
 treatment 3070
 milk composition 634
 Humerus epicondylitis 2963
 fracture 3018
 bandage in (Fig) 3021
 (Fig) 2023 3018 3020
 hanging cast in (Fig) 3000
 treatment (Table) 3014
 osteomyelitis (Fig) 2931 2932 2933 2937
 Humoral changes in disease 10
 effects 10
 systems 4
 Hundskrankheit 480
 Hunger loss of See *Anorexia*
 morbid definition 1302
 Hunner's ulcer pathology 2345
 theory of ureteral strictures 2346
 Hunterian glossitis in hyperchromic anemia 1670
 (Fig) 1674
 in pernicious anemia 1077
 Huntington's chorea 1417
 diff diag (Table) 1333
 Hutchinson's melanotic whitlow 3225
 teeth (Fig) 1871
 in prenatal syphilis 3087
 tand 3087
 Hyaline casts 3682
 metamorphosis definition 7
 Hydatid disease See *Echinococcus*
 Hydatidiform mole 2654
 (Fig) 2655
 vaginal bleedings in diff diag (Table) 2664
 Hydroadenitis suppurativa axillaris 3253
 Hydroadenomas 2547
 Hydramnios 2669
 Hydrarthrosis definition 11
 diff diag (Table) 2810
 intermittent diff diag (Table) 2878
 Hydrea aestivale 3176
 diff diag (Table) 422 3146 3267
 rash in, diff diag (Table) 3090
 Hydrocele definition, 11
 differentiation from spermatocele 2436
 injection, 2433
 technic 3037
 (Fig) 3037
 of spermatic cord 2452
 of testis 2430
 (Fig) 2431
 in tuberculous epididymitis 2163
 Hydrocephalus, congenital 1409
 (Fig) 1410
 diff diag (Table) 1333
 external 1409
 internal 1410
 Hydrocephalus, internal brain tumor and 1484
 diff diag (Table) 2720 2774
 Hydrochloric acid 1740
 dilute in stomach disorders dosage 1763
 dosage (Table) 1048
 in gastric contents 3721
 interpretation 3725
 method of administration, 1778
 in pernicious anemia dosage 1092
 in pernicious vomiting of pregnancy 2638
 poisoning clinical manifestations (Table) 755
 diagnosis (Table) 755
 occupations susceptible to (Table) 753
 treatment (Table) 755
 in pregnancy 2632
 in rheumatoid arthritis 2021
 therapeutic test with 1754
 Hydrocystoma 3464
 Hydrogen ion concentration disturbances 718
 effect of changes in 2799
 heart muscle function and 776
 peroxide as antiseptic 3139
 sulfide poisoning clinical manifestations (Table) 749
 diagnosis (Table) 749
 occupations susceptible to (Table) 749
 treatment (Table) 749
 Hydronephrosis bleeding pyelogram (Fig) 2270
 congenital, 2284
 differentiation from appendicitis 2284
 faulty posture and 3053
 intermittent 2295
 Hydropericardium cause (Table) 068
 definition 11
 manifestation (Table) 068
 Hydrophobia 430
 vaccination for 440
 Hydrophoea signs 1068
 of gallbladder 2006
 Hydrostatic pressure 6
 in tumor physiology 703
 Hydrotherapy 3792
 in febrile psychoses 1377
 in obesity 699
 in typhoid fever 236
 Hydrothorax definition 11
 in backward failure 913
 diff diag (Table) 2032
 Hydro-ureteronephrosis (Fig) 2271
 Hydrocortisone 1267
 Hygiene errors in insomnia due to diff diag (Table) 1305
 somnolence due to diff diag (Table) 1309
 general, correction of 3753
 oral 1639
 of rectum and anus 1909
 Hygrota 966
 subdural, 1454
 Hymen imperforate 2529
 Hymenolepis nana morphology (Table) 2732
 ova (Fig) 1894
 size (Fig) 1894
 in stool (Fig) 891
 Hyoscine See *Scopolamine*
 Hyoscyamus, 3975
 Hyperacidity definition 1 69
 Hyperacusis diff diag (Table) 2096
 Hyperadrenalemia, 1264

- Hyperadrenalemia, cutaneous manifestations 3240
- Hyperalgesia, diff diag (Table) 2132
- Hyperbilirubinemia, 1931
- Hypercalcemia, diff diag (Table) ~23
in hyperparathyroidism 1226
- Hypercapnia, 3830
- Hyperchloremia, diff diag (Table) 732
- Hypercholesterolemia, diff diag (Table) 736
- Hyperchromic anemia, gastric contents in (Table) 3726
macrocytic, 1077 See also *Pernicious anemia*.
symptomatic 1033
- Hyperemes gravidarum 2637
- Hyperemia, cerebral, 1438
diff diag (Table) 1437
definition, 11
in peripheral vascular disease (Table) 996
- Hyperepinephrinemia, emergency hypothesis, 1199
- Hyperergy 3329
- Hyperextension of cervical spine 3007
- jacket (Fig) 3003
- Hyperglobulinemia, albumin globulin ratio in 736
- Hyperglycemia, diff diag (Table) 733
- Hypergonadism, 2418
- Hyperhydration, 705
- Hyperhydremia, 703
- Hyperidrosis 3460
generalized, 3461
pathologic causes 3461
local, 3460
suggested examinations in, 3461
- Hyperkalemia, 736
- Hyperinsulinism 1242
diff diag (Table) 635 1245
hypoglycemia in, diff diag (Table) 734
pathology 1242
surgery in, indications 1245
in weight loss (Table) ~00
- Hyperkeratosis 3165
definition 3101
in vitamin A deficiency 619
(Fig) 618
- Hyperkalemia, diff diag (Table) 733
- Hyperkinesia, definition 1229
- Hypermyxorrhoea, definition 1769
- Hypernatremia, diff diag (Table) 730
- Hypernephroma, glycogen infiltration in, 9
of Grawitz (Fig) 2323
pathology 2327
- Hyperopia 1536
(Fig) 1536
- Hyperparathyroidism, 1225
bone radiotranslucency in, diff diag (Table) 2806
clinical manifestations 1226
cutaneous manifestations 3240
differentiation from multiple myeloma, 1230
f. om Paget's disease, 1230
f. om polycystic, fibrous dysplasia, 1230
from rickets, 1230
hypercalcemia in, diff diag (Table) 723
hypophosphatemia in, diff diag (Table) 728
laboratory data, 1228
oral manifestations 1673
ossification disturbances in, diff diag (Table) 2798
- Hyperparathyroidism pain in, diff diag (Table) 2941
- pathogenesis, 1228
- phosphatase activity in, diff diag (Table) 728
- postoperative complications, 1231
- renal, 1228
complications 2373
- surgery 1231
treatment, 1231
- Hyperphosphatemia, diff diag (Table) 727
- Hyperpinealism diff diag (Table) 692
- Hyperpituitarism, basal metabolism in diff diag (Table) 720
cutaneous manifestations 3240
diff diag (Table) 2779
- hyperglycemia in, diff diag (Table) 733
- positive Benedict test in, diff diag (Table) 3676
- postpuberal, diff diag (Table) 692
- prepuberal, diff diag (Table) 692
- Hyperplasia, compensatory in
definition 6
of thyroid gland (Fig) 8
- Hyperpnea, diff diag (Table) 2016
- Hyperpotassemia 601
diff diag (Table) 735
- Hyperproteinemia, diff diag (Table) 735
- Hyperpyrexia, therapeutic, 25 See also *Hyperthermy*
in gonorrhea, 223
in infectious arthritis 2910
in psychotherapy 1330
in rheumatic fever 196
- Hyperresonance, 5535
diff diag (Table) 5538
- Hypersalivation, diff diag (Table) 1709
- Hypersecretion, definition, 1769
- Hypersensitivity 3329
- Hypertension, arteriosclerosis and 978
asymptomatic treatment of 912
in backward failure 943
cardiac contour in (Fig) 796
in chronic glomerulonephritis 2563
electrocardiogram in (Fig) 820
essential 900
in cardiac dilatation, treatment, 871
clinical manifestations, 904
complications 904
cardiovascular 906
encephalopathic, 907
ocular 908
neurologic, 906
renal, 906
diff diag (Table) 868
electrocardiogram in (Fig) 817 821 830 841
encephalopathy in, 907
treatment, 916
etiology of 900
autonomic imbalance 900
endocrinopathic, 901
humoral, 901
psychogenic, 900
renal, 901
kidney lesions in, 2.63
malignant phase 908
electrocardiogram in (Fig) 821 822
pathogenesis, 900
renal ischemia and, 2273

- Hormones therapy in fatigue 2869
 in hypertrichosis evaluation 3138
 in infancy dosage 2741
 thyroid 1188
 pharmacology 1188
 preparations 1189
 therapeutics 1190
 Horn cutaneous diff diag (Table) 3161
 Horner syndrome 1400 2776
 Hour glass contraction 1808
 H substance 784 785
 in capillary circulation 784
 Huddleson's brucellergin 317
 Human bites 3198
 treatment 3070
 milk composition 634
 Humerus epicondylitis 2903
 fracture 3018
 bandage in (Fig) 3021
 (Fig) 3023 3018 3020
 hanging cast in (Fig) 3000
 treatment (Table) 3014
 osteomyelitis (Fig) 2931 2932 2933 2937
 Humoral changes in disease 10
 effects 10
 systems 4
 Hundskrankheit 480
 Hunger loss of See *Anorexia*
 morbid definition 1302
 Hunter's ulcer pathology 2343
 theory of ureteral strictures 2346
 Hunterian glossitis in hyperchromic anemia
 1670
 (Fig) 1674
 in pernicious anemia 1077
 Huntington's chorea 1317
 diff diag (Table) 1333
 Hutchinson's melanotic lentigo 3225
 teeth (Fig) 1671
 in prenatal syphilis 3287
 triad 3287
 Hyaline casts 3682
 metamorphosis definition 7
 Hydatid disease See *Echinococcus*
 Hydatidiform mole 2654
 (Fig) 2653
 vaginal bleeding in diff diag (Table) 2664
 Hydradenitis suppurativa axillaris 3243
 Hydradenomas 2547
 Hydranomas 2669
 Hydrarthrosis definition 21
 diff diag (Table) 2810
 intermittent diff diag (Table) 2878
 Hydrea acetivale 3176
 diff diag (Table) 422 3146 3267
 rash in diff diag (Table) 3290
 Hydrocele definition 11
 differentiation from spermatocele 2436
 injection 2433
 technic 3937
 (Fig) 3937
 of spermatic cord 2432
 of testis 2430
 (Fig) 2431
 in tuberculous epididymitis 2403
 Hydrocephalus congenital 1409
 (Fig) 1410
 diff diag (Table) 1333
 external 1409
 internal 1410
 Hydrocephalus, internal brain tumor and 1421
 diff diag (Table) 2723 2774
 Hydrochloric acid 1740
 dilute in stomach disorders dosage 1753
 dosage (Table) 1018
 in gastric contents 3721
 interpretation 3725
 method of administration 1778
 in pernicious anemia dosage 1082
 in pernicious vomiting of pregnancy 2638
 poisoning clinical manifestations (Table)
 765
 diagnosis (Table) 755
 occupations susceptible to (Table) 753
 treatment (Table) 753
 in pregnancy 2632
 in rheumatoid arthritis 2021
 therapeutic test with 1751
 Hydrocystoma 3164
 Hydrogen ion concentration disturbances 718
 effect of changes in 2799
 heart muscle function and, 776
 peroxide as anti-epileptic 3110
 sulfide poisoning clinical manifestations
 (Table) 749
 diagnosis (Table) 749
 occupations susceptible to (Table) 749
 treatment (Table) 749
 Hydromephros bleeding pyelogram (Fig)
 2270
 congenital 2261
 differentiation from appendicitis 2261
 faulty posture and 2258
 intermittent 2295
 Hydropneumothorax cause (Table) 908
 definition 11
 manifestations (Table) 908
 Hydrophobia 439
 inoculation for 440
 Hydrops foetalis signs 1066
 of gallbladder 2006
 Hydrostatic pressure 11
 in tissue physiology 701
 Hydrotherapy 2792
 in febrile psychoses 1377
 in obesity 699
 in typhoid fever 236
 Hydrothorax definition, 11
 in backward failure 243
 diff diag (Table) 2033
 Hydro-ureteronephrosis (Fig) 2271
 Hydrotaxycorticosterone (Table) 1267
 Hygiene errors in insomnia due to diff diag
 (Table) 1393
 anmnolence due to diff diag (Table) 1394
 general correction of 3753
 oral 1858
 of rectum and anus 1909
 Hygroma 966
 subdural 1454
 Hymen imperforate 2529
 Hymenolepis nana morphology (Table) 5732
 ova (Fig) 1894
 anus (Fig) 1894
 in stool (Fig) 3731
 Hyoscine See *Scopolamine*
 Hyoscyamus, 3875
 Hyperacidity definition 1769
 Hyperacusis diff diag (Table) 2096
 Hyperadrenalemia 1264

- Hypoinsulinism cutaneous manifestations 3240
 hyperglycemia in diff diag (Table) 733
 Hypomenorrhea, diff diag (Table) 2618
 Hyponatremia diff diag (Table) 729
 Hypoparathyroidism 1232
 cutaneous manifestations 3238
 hyperphosphatemia in, diff diag (Table) 727
 hypocalcemia in diff diag (Table) 721
 tetany of treatment 726
 Hypopharynx examination, 3603
 Hypophosphatemia diff diag (Table) 728
 in hyperparathyroidism 1229
 in periodic paralysis, 1416
 Hypophysis, 1152. See also *Pituitary gland*
 Hypopituitarism cutaneous manifestations 540
 diff diag (Table) 693
 hypoglycemia in diff diag (Table) 731
 Hypoplasia definition, 177
 Hypoplastic anemia, 1030
 Hypopotassemia, diff diag (Table) 731
 Hypoproteinemia 706
 ascites in diff diag (Table) 1021
 in edema production 12
 in mercury poisoning 766
 postoperative treatment, 4007
 protein high diets in, 503
 treatment, serum albumin in 81
 Hypoproteobinemia, 1109
 diff diag (Table) 1112
 Hypopyon keratitis 1629
 Hypopyrexia, 20 See also *Temperata sub-normal*
 acute diff diag (Table) 22
 sustained diff diag (Table) 21
 Hypospadias symptoms (Table) 2286
 Hypostasis fever in 25
 Hyposthenuria 2231
 Hypotension 916
 in Addison's disease 1274
 diff diag (Table) 917
 gravitation shock in, 925
 ocular 1583
 shock in, 933
 treatment 918
 Hypothyroidism 1191
 adult 1193
 basal metabolism in, diff diag (Table) 719
 blood cholesterol in, diff diag (Table) 736
 cutaneous manifestations 3238
 decreased growth of diff diag (Table) 76
 diff diag (Table) 693 695
 hypoglycemia in, diff diag (Table) 731
 hypopyrexia in (Table) 21
 osteio-arthropathies in diff diag (Table) 856
 pregnancy and 2674
 Hypotonus cardiac, 772
 (Table) 772
 Hy terectomy indications for 3994
 for uterine fibroids 2538
 Hystera, 1353
 conversion 1554
 optic manifestations 1585
 Hysterical contractures 2948
 personality 1553
 Hy terotomy indications for 3993
- Ice cream 637
 composition of (Table) 638
 polluted, in typhoid epidemic 227
 Icterus See *Jaundice*
 gravis neonatorum. See *Erythroblastosis foetalis*
 index, 1918
 of serum (Table) 2
 Ichthyol 3120
 Ichthyosiform erythroderma congenital, 3153
 Ichthyosis 3152
 congenita 315
 diff diag (Table) 3384
 (Fig) 3152
 in infancy diff diag (Table) 3146
 ophthalmic manifestations 1563
 simplex, 3152
 Ideas flight of definition 1297
 overdetermined definition, 1297
 of reference definition 1297
 Idee fixe 1357
 in paranoia, 1373
 Identification of newborn 2749
 Idiocy 1532
 amaurotic family 1412
 abnormal joint motility in diff diag (Table) 2803
 microcephalus in diff diag (Table) 2774
 ophthalmic manifestations 1584
 mongolian 1165
 (Fig) 1166
 pigmentation in diff diag (Table) 3155
 Idiopathic hypochromic anemia, 1089
 Multiple hemorrhagic sarcoma diff diag (Table) 3211 3379
 Thrombocytopenic purpura 3423
 diff diag (Table) 3398
 Ideoventricular rhythm 886
 "Ida 335
 Ileitis regional 1853
 (Fig) 1854
 pathology 1853
 surgery in 1855
 treatment 1853
 Ileocolostomy in cancer of colon 1868
 diet after 689
 Ileus adynamic 4010
 clinical manifestations 4010
 decompression of bowel in 4010
 diff diag (Table) 1878
 neostigmine in, dosage, 1851
 in peritonitis (Fig) 1857
 postoperative 4010
 treatment, 4010
 duodenal, 1808
 dynamic, diff diag (Table) 1878
 in infections treatment, 72
 paralytic See *Ileus adynamic*
 Illumination focal of eye, technic, 3022
 (Fig) 3022
 Illusion definition, 1293
 Imadyl as rubefacient, 3112
 Imbalance, autonomic, 18 139.
 asthenia and 837
 hyperthyroidism and, 1200
 manifestations 1398
 in neuroses 1342
 rheumatoid arthritis and, 2211
 Imbecility 1532

- Hypertension essential, treatment** 911
 of asymptomatic stage 912
 in cardiac dilatation 871
 surgical 914
 of symptomatic stage 914
 fundus oculi in 909
 in glomerulonephritis 2376
 hyperchloremia in diff diag (Table) 732
 in hyperthyroidism 1904
 malignant, 908
 ophthalmic manifestations 1387
 nitrites in evaluation 3695
 normal electrocardiogram in 4030
 in periarthritis nodosa 1078
 portal 1080
 pulmonary 910
 surgery in 915
 symptomatic treatment 914
 systolic diff diag (Table) 910
 in toxemia of pregnancy 2639
 treatment 911
- Hypertensive encephalopathy in glomerulonephritis** 2376
 treatment 916
- Hypertherm (Fig)** 3789
- Hyperthermy** 3789
 in brucellosis 321
 in eye diseases 1552
 in general paresis 1379
 blanket wrapping 1379
 in gonorrhea 223
 in thrombo-angitis obliterans 1031
 typhoid vaccine used for 1379
- Hyperthyroidism** 1197
 arteriosclerosis and 978
 basal metabolism in diff diag (Table) 720
 blood cholesterol in ~38
 bone radiotranslucency in diff diag (Table) 2806
 circulatory disturbances in (Table) 954
 clinical types 1205
 complications 1207
 in congestive heart failure treatment, 943
 cutaneous manifestations 2238
 diff diag 1209
 (Table) 858 910 9346
 electrocardiogram in (Fig) 823
 electrocardiographic changes in 808
 hepatitis caused by 1964
 hyperglycemia in diff diag (Table) 733
 hypertension in 1205
 iodides in 911
 lymphocytosis in diff diag (Table) 1098
 masked 1205 1210 1841
 ophthalmic manifestations 1599
 oral manifestations 1673
 osteoarthropathies in diff diag (Table) 856
 pigmentation in diff diag (Table) 3942
 positive Benedict test in diff diag (Table) 3976
 postoperative complications 1215
 pregnancy and, 2674
 roentgen therapy in 1212
 sinus tachycardia in 874
 surgery in, 1214
 treatment 1210
 in cardiac dilatation 871
 unitarian theory 1208
 in weight loss (Table) 700
- Hypertonicity cardiac** 779
 (Table) 772
- Hypertrichosis** 3437
 localized 3410
 in viridum 1269
- Hypertrophy compensatory** 7
 definition 6
 of thyroid gland (Fig) 6
 work 7
- Hyperuricemia diff diag (Table)** 737
- Hyperventilation alkalosis in diff diag (Table)** 722
 methods 2053
- Hypervitaminosis D hyperphosphatemia in diff diag (Table)** 727
- Hyphe, definition** 483
- Hypno-narco-analysis in psychotherapy** 1323
- Hypnosis barbiturates in (Table)** 8841
 in obstetrics 2079
 in psychotherapy 1328
- Hypnotics** 3336
 in hypertension 912
 in infancy dosage 2745
 in insomnia 1307
 preparations 3636 3837
 in shock prevention 938
 in weight loss ~01
- Hypo-acidity definition, 1709**
- Hypo-adrenalism, 1264**
- Hypocalcemia** 724 See also *Tetany*
 diff diag (Table) 724
- Hypochloremia, diff diag (Table)** 732
- Hypochlosteremia diff diag (Table)** 733
- Hypochondriasis** 1333
 definition 1297
 in neurosis 1841
- Hypochromic anemia idiopathic, 1089**
 of pregnancy 1088 2645
- Hypodermoclysis** 3771
- Hypo-ergy** 3329
- Hypogastric pain in, diff diag (Table)** 902
 swellings in diff diag (Table) 2621
- Hypoglossal nerve neuritis** 1489
- Hypoglycemia clinical manifestations** 733
 diff diag (Table) 734
 in hyperinsulinism 1243
 of newborn 2779
 stages 734
 sugar in 591
 treatment 735
 in weight loss, 701
- Hypoglycemic reactions insulin production and** 689
 in Addison's disease 1275
 treatment 1245
 shock in insulin therapy 1241
 syncope of 926
- Hypogonadism diff diag (Table)** 695
 female 2525
 genital 2594
 stilbestrol in, 2525
 male 2412
 androgen therapy in dosage 2403 2416
 ossification disturbances in diff diag (Table) 2709
 osteoarthropathies in diff diag (Table) 856
 secondary gonadotropin therapy in 2417
- Hypoinsulinism blood cholesterol in diff diag (Table)** 736
 blood fat in diff diag (Table) 739

- infection(s) abdominal pain in diff diag (Table) 1748
 febrile fever in 23
 albuminuria in diff diag (Table) 2371
 amenorrhea in diff diag (Table) 2618
 anorexia in diff diag (Table) 17 9
 anti infective therapy in 73
 asthma in diff diag (Table) 890
 bacillary 22,
 bacterial general considerations 137
 bone pain in lower extremities in diff diag (Table) 2369
 radiotranslucency in diff diag (Table) 2308
 swellings in diff diag (Table) 2344
 pain diag (Table) 1463
 diagnostic criteria 1463
 care of bowels in 72
 carrier in ■
 chills in diff diag (Table) 3²
 chronic type diet in 10 °
 of circulatory system 100,
 coecal, 151
 convulsions in diff diag (Table) 1519
 cryptogenic fever in diff diag (Table) 26
 culture methods (Table) 51
 cutaneous manifestations in diff diag (Table) 3216
 definition 64
 diagnosis methods 44
 diarrhea in diff diag (Table) 1340
 diet in 71
 diminution of hearing in diff diag (Table) 2019
 double vision in diff diag (Table) 1528
 exophthalmos in diff diag (Table) 1575
 of female reproductive system 2084
 fever in (Table) 26
 fibrillations in, diff diag (Table) 2383
 focal 42
 elimination of in eye disorders 1550
 oral lesions and 1631
 fungous 489
 gums in diff diag (Table) 1701
 helminthic 537
 hematemesis in diff diag (Table) 1764
 hematuria in, diff diag (Table) 2306
 hypopyrexia in (Table) ■
 incubation period (Table) 66
 initial manifestations 1860
 involuntary nervous system and (Table) 1396
 kidney enlargement in diff diag (Table) 2230
 lip disturbances in diff diag (Table) 1635
 local 42
 lymphadenopathy in, 1137
 of male reproductive system 2452
 malignant and, 3215
 management, 43
 mechanism 37
 of meninges diag (Table) 1462
 manifestations 146
 monocytosis and diff diag (Table) 1099
 of newborn 2785
 nosebleed in, diff diag (Table) 2423
 nursing care in 63
 ophthalmic manifestations 1601
 oral manifestations in diff diag 1670
- infection(s) orbital disturbance in, diff diag (Table) 1615
 organisms in list 38
 ostealgia diff diag (Table) 2841
 pain in eye in diff diag (Table) 1582
 in hands or feet diff diag (Table) 2908
 in lower extremities in diff diag (Table) 2870
 in upper extremities in diff diag (Table) 2900
 palate in diff diag (Table) 1716
 photophobia in diff diag (Table) 1574
 pleural effusion in diff diag (Table) 203°
 postoperative prevention, 4005
 prevention in backward failure 947
 protozoal 506
 public health measures in, 64
 quarantine data (Table) 66
 reduction of visual acuity in diff diag (Table) 1639
 resistance to 75
 of respiratory system 2105
 clinical (Table) 2106
 rickettsial 366
 rigidity in diff diag (Table) 2382
 shock in 933
 of skeletal systems 2904
 diff diag (Table) 2327
 lump in diff diag (Table) 2933
 skin in 3243
 somnolence in diff diag (Table) 1904
 sore throat in diff diag (Table) 2071
 sees in epidemics 35
 spasms in diff diag (Table) 882
 spinal cord diff diag (Table) 1461
 spir ocheal 329
 spleen in 1131
 stomach in 1766
 surgery in, 73
 susceptibility to 75
 tarry stools in diff diag (Table) 1813
 tearing in diff diag (Table) 1625
 tongue disturbances in, diff diag (Table) 1637
 tooth, periapical (Fig) 1682
 treatment, 64
 anti infective agents in 87
 nonspecific 68
 specific 73
 of urinary system 2324
 virus 357
 of voluntary nervous system, 1460
 water intake in 71
- Infectious arthritis 2910
 diff diag (Table) 2311
 lump in (Table) 2736
 diseases See specific disease and Infection
 fevers diff diag (Table) 30
 hepatitis 1979
 jaundice 360
 animal inoculation in (Table) 62
 clinical manifestations 361
 diagnosis by smear in (Table) 50
 diff diag (Table) 23
 eye in (Fig) 359
 ocular manifestations 1605
 prognosis, 362
 serologic test in (Table) 60
 treatment 363
 leukopenia 471

- Immersion foot 1002
 Immobilization in fracture (Table) 2984
 in infectious arthritis 2910
 Immune serum See Serum
 Immunity acquired 73 76
 active agents in 76
 in children time table 80
 technic, 70
 active artificial 73
 cellular defenses in 75
 chemical defenses in 74
 hemolytic streptococci infection and 161
 mechanical defenses in, 75
 natural 73 76
 to colon bacillus 249
 passive acquired III
 artificial 75
 in syphilis 332
 to tuberculosis 258
 types of 78
 Immunization active 78
 reactions to 80
 technic 70
 time table 80
 of contacts in epidemics 83
 in diphtheria, 309
 history of as diagnostic and 44
 pertussis 283
 tetanus 296
 in typhus 375
 in virus diseases 389
 Immunologic defenses 74
 Immunology diagnosis and 43
 Impairment of vision diff diag (Table) 1638
 Impregnization, 3251
 Impetigo of Boeckhart See *Folliculitis pustular*
 bullosa contagiosa, 3252
 diff diag (Table) 3334
 contagiosa 3251
 diff diag (Table) 3251 3267 3351 3382
 of ear diff diag (Table) 3306
 (Fig) 3247
 in infancy diff diag (Table) 3146
 isolation in 3256
 nose in diff diag (Table) 2110
 furfuraceous 3252
 herpetiformis diff diag (Table) 3334
 mercuric ointment in 151
 of newborn epidemiology 152
 quarantine data on (Table) 66
 Impotence 2400
 definition 1304
 diff diag (Table) 2409
 of nervous origin 2439
 treatment 2410
 Insanitation blood cholesterol in 733
 metabolism in 584
 Incest definition, 1303
 Incised wound, treatment 3966
 Incision of breast abscess (Fig) 3078
 in episiotomy (Fig) 2692
 for hand (Figs) 2975
 procedures 3093
 in quinsy 2156
 Incisional hernia 3002
 Inclusion blennorrhoea, 1623
 bodies of viruses 338
 conjunctivitis, 1615
 Income tax deductions 4050
 Incontinence of feces diff diag (Table) 1915
 Incontinence of urine diff diag (Table) 2265
 Indian relapsing fever 357
 Indicanuria test for 3635
 Indigestion diff diag (Table) 1770
 in infancy abdominal pain in, diff diag
 (Table) 2730
 nervous definition, 1769
 Individual immunity 78
 Infancy abdominal pain in diff diag (Table)
 2730
 anemias of 1088
 diff diag (Table) 1087
 (Table) 2738
 angiomas in 3301
 anterior pituitary gland deficiency in 1164
 appendicitis in, 1884
 blood count in, 1041
 formation in 1040
 Bryant traction in fractures of femur 3044
 chest size in (Table) 2727
 convulsions in diff diag (Table) 2780
 treatment 781
 dermatoses of diff diag (Table) 3146
 diarrhea in diff diag (Table) 1841 2782
 treatment 2781
 diet in 2786
 disturbances of 2725 2758
 drugs in, 2742
 encephalomyelitis in, 452
 feeding 2749
 artificial 2751
 breast 2749
 requirements in 2752
 supplementary 2755
 head disturbances in, diff diag (Table) 2774
 size in (Table) 2727
 height in (Table) 2727
 maturity in criteria of 2763
 mental development normal 2727
 growth in 2727
 prematurity 2763
 pulse rate in (Table) 2727
 rectal temperature in (Table) 2727
 respiratory rate in (Table) 2727
 stridor in diff diag (Table) 2792
 treatment methods in, 2740
 vomiting in, diff diag (Table) 2794
 loss in, diff diag (Table) 2794
 weight (Table) 2727
 Infant newborn See *Newborn infant*
 syphilitic 2789
 Infantile atrophy 2783
 cerebral paralysis 1435
 eczema 3313
 paralysis 457 2901 See also *Polomyelitis*
 Infantulism diff diag (Table) 693
 pancreatic 1937
 pituitary 1164
 microcephalus in diff diag (Table) 2774
 treatment 692
 Infarction in lung 2086
 (Fig) 2087
 hemorrhagic (Fig) III
 myocardial 992
 electrocardiographic changes in 986
 symptoms 1008
 renal 2330
 splenic, 1130
 Infected wound treatment, 3961
 Infection(s) 3. See also specific infection

- Intercourse, sexual in pregnancy 2633
 d ring treatment for syphilis 319
 Intermedius nerve neuritis, 1483
 Internal secretion organs diseases 1141
 Internist, 3901
 indications for consultation 3653
 Internship 4033
 Intertrigo 3161
 in axilla diff diag (Table) 3253
 diff diag (Table) 316 3274 3297
 of ear diff diag (Table) 2113
 in infancy diff diag (Table) 3146
 of vulva, 2395
 I tetrochanteric fracture of femur (Fig) 3010
 Interventricular septal defect, 957
 (Fig) 959
 Intervertebral disk rupture 3074
 Intestines, anatomy 3382
 antiseptics, 1831
 auto-intoxication, 1826
 indicanuria in 3635
 lactose in, dosage 3824
 bacteriology III 0
 congenital abnormalities, 1864
 crises in adrenal-cortical deficiency 1273
 1841
 decompression, 1823
 distention, diff diag (Table) 1878
 in lobar p eumonia, 2179
 prevention 2183
 postoperative 4010
 dist miasis 1809
 geographical distribution 1808
 disturbances abdominal rigidity in, diff diag
 (Table) 1746
 diagnosis and treatment methods 1820
 diarrhea in, diff diag (Table) 1840
 dy pepsia in diff diag (Table) 1771
 incontinence of feces in diff diag (Table)
 1916
 pa n in hypogastrium in, diff diag (Table)
 2302
 in left lower quadrant, diff diag (Table)
 1866
 in right lower quadrant, diff diag (Ta-
 ble) 1880
 larry stools in diff diag (Table) 1843
 ferments 1827
 fistulas 2545
 granulomas 1881
 helmn thiasis 1893
 indigestion chronic, 1937
 infestations, 1891
 inflammations 1878
 tubation and drainage 1823
 lesions local, 1864
 medicaments for 1825
 metabolic disturbances and 1839
 mucosa membrane of hemorrhagic disease
 and 1110
 neoplasms, 1888
 neurogenic disturbances and 1844
 n uroses, 1845
 functional 1845
 hypersthenic 1846
 nomenclature 1846
 hyposthenic 1848
 reflex, 1845
 types, 1846
 normal flora 149 1821
 obstruction, 1873
 acute umbilical pain in, diff diag (Table)
 1887
 due to fecal impaction 1875
 due to foreign bodies 1875
 (Fig) 1874
 hyperpotassemia in, diff diag (Table)
 731
 in infancy diff diag (Table) 2730
 postoperative, 4013
 treatment 4015
 uric acid level, diff diag (Table) 737
 perforation, 1873
 physiology 1820
 polyps 1883
 protozoa trophozoites, (Table) 3,33
 teniasis 1899
 epidemiology of (Fig) 1900
 tuberculosis 1860
 end organ, 1862
 (Fig) 1860
 vascular disturbances 1844
 Intocostrin, 3839
 in birth paises dosage, 1438
 Intoxication, alcoholic 1884
 pathologic, 1886
 water II
 Intra-auncular pressure curve 776
 septal defects, 956
 cardiac contour in (Fig) 795
 electrocardiogram in (Fig) 823
 Intracardiac injection, 3779
 Intracellular water constituents of 586
 Intracranial contents herniation of diff diag
 (Table) 2774
 glands diseases, 1152
 hemorrhage 1439
 of infants, 2773
 injuries, 1451
 pressure increased, in brain abscess 1468
 in brain tumors 1491
 diff diag (Table) 910
 due to pineal neoplasms 1185
 ophthalmic manifestations 1585
 symptoms 1421
 use of sugars in, 891
 signs in Fröhlich's syndrome 1168
 venous sinus thrombosis 1446
 Intracutaneous immunization 79
 Intradermal injection 3770
 test (Fig) 633
 technic, 557
 vaccination, 499
 Intraheptol, 1967
 Intramedullary infusion 3778
 (Fig) 3777
 Intramembraneous ossification 2796
 Intramuscular immunization 80
 injection 3772
 of serum, 81
 Intranasal examination, in rhinogenic menin-
 gitis 2129
 Intra-ocular fluid 1526
 foreign bodies removal 1553
 tens on, elevation, in glaucoma, 1580
 measurement, 1545 624
 normal 1526
 variations in, 1526
 Intraspinal injection, technic, 3789
 Intrathecal injection of serum 85

- Infectious mononucleosis** 466
 bone marrow count in (Table) 1013
 diagnosis by smear in (Table) 50
 diff diag (Table) 175 180 412
 differentiation from leukemia 1105
 (Fig) 469
 lymphadenopathy in diff diag (Table) 1136
 rash in diff diag (Table) 173 3261 3982
 serologic test in (Table) 50
 symptoms other than rash in diff diag (Table) 2791
 throat in diff diag (Table) 3601
 polyneuritis 462
 state 41
- Infertility female diff diag (Table) 2492**
 male diff diag (Table) 2119
- Infestations intestinal 1891**
- Infiltration anesthesia 3917 (Fig) 3318**
 in obstetrics 2030
 technic 3917
- Inflammation 18**
 chronic 18
 definition 3101
 edema 12
 in pneumonia (Fig) 17
 sequels 17
- Influenza 396**
 bacillus *See Hemophilus influenzae*
 infections 285
 treatment 287
 circulatory disturbances in (Table) 634
 complications 399
 diagnosis 398
 laboratory methods in 399
 smear in (Table) 61
 epidemiology 397
 fever in diff diag (Table) 1006
 immunity to 235
 joint pain in diff diag (Table) 2304
 neutralization test in 59
 quarantine data on (Table) 66
 summer 430
 treatment, 400
 vaccine evaluation "D
 virus strains in 397
- Influenzal conjunctivitis 1641**
 bacteremia 287
 meningitis 286
 pneumonia 287
 pneumonitis 2188
- Infra-red rays range 3703**
 therapy 3787
 in eye disturbances 1549
- Infusion intramedullary technic 3778**
 intravenous by drip method 3775
 equipments 3776
 (Fig) 3775
 reactions 3776
 plasma technic 3778
 rectal 1825
- Inguinal adenitis diff diag (Table) 3092**
 hernia 1799 3091
 swellings diff diag (Table) 3092
- Inhalation anesthesia in minor surgery 39 1**
 technic 3924
 in obstetrics 2679
 shock from, 393
 anesthetics evaluation 3927
 steam 3028
- Inhalator for carbon dioxide-oxygen mixtures, (Fig) 3821**
- Injection of bismuth intramuscular 3772**
 of eye *See Eye injection of*
 hypodermic, 3770
 of insulin (Fig) 3771
 intracardiac 3779
 in circulatory disturbances 353
 intradermal, 3770
 intramuscular 3772
 of serum 84
 intrathecal of serum 85
 intravenous of serum 85
 of mercury intramuscular 3770
 subcutaneous 3770
 treatment by list of 3770
 of varicose veins (Fig) 3940 3942
- Injury body types of 15**
 chemical 3168
 to deeper tissues detection of 3932
 due to actinic rays 3178
 to cold, 3171
 to heat, 3169
 to roentgen rays 3177
- Innervation reciprocal in heart function 779**
- Inoculation. *See Immunization***
- Inorganic arsenicals, 125**
 action 125
- Inositol 627**
- Insanity manic depressive *See Manic depressive insanity***
- Insects as vectors (Table) 42**
- Insemination artificial method 2508**
- Insight lack of definition 1208**
- Insomnia, diff diag (Table) 1305**
 drugs in dosage 1307
 in hyperthyroidism 1202
 treatment 1306
- Instep dislocation of treatment (Table) 2977**
- Institutionalization in infectious diseases 68**
 for psychotics 1331
- Instrumentation, treatment by 3799**
- Instruments care of 3911**
- Insular tissue disturbances 1204**
- Insulin 1237**
 administration 1240
 allergy 1241 1253
 chemistry 1233
 in infancy dosage 2744
 injection of (Fig) 3771
 local reactions 1242
 technic, 1233
 in nondiabetics 1241
 physiology 1237
 preparations 1238
 blood sugar curves (Fig) 1239
 production, effect of glucose on 589
 resistance 1239
 shock 1241
 in psychotherapy 1330
 treatment, 1233
 therapeutics 1241 3846
 therapy in diabetes mellitus 1235
 in tuberculous 1269
 untoward reactions 1241
- Intelligence tests 132**
- Intercondylar fractures of humerus 3023**
- Intercostal spaces disturbances diff diag (Table) 3123**
- Intercourse sexual 2401**

- Jaundice icterus index in 1948
 in infancy diff diag (Table) 3146
 infectious 360
 annual inoculation in (Table) 5
 diagnosis by smear in (Table) 50
 diff diag (Table) 28
 eye in (Fig) 339
 serologic test in (Table) 69
 in lobar pneumonia, 2179
 of newborn, diff diag (Table) 61
 obstructive 1953
 diff diag (Table) 1954
 pigmentation in diff diag (Table) 3212
 posthepatic, 2006
 pruritus in diff diag., 3170
 in pulmonary infarction, 2098
 rheumatoid arthritis and, 2931
 in Rocky Mountain spotted fever 378
 serum, 87
 anti-infectious, evaluation 85
 validity of tests in, 1932
 in vitamin K deficiency (Fig) 618
 in yellow fever 478
 Jaw ankylosis 1689
 (Fig) 1688
 dislocations manifestations (Table) 2965
 treatment (Table) 2965
 disturbances, diff diag (Table) 1 05
 fractures 3013
 treatment (Table) 3004
 osteoma, 1716
 sarcoma 1719
 subluxations manifestation (Table) 2965
 treatment (Table) 2965
 tumor 1712
 (Fig) 1715
 Jejunal feeding formula for 687
 Jejunostomy 1780
 indications for 3003
 Jensen's disease 1685
 Joint(s) See also individual joint.
 anatomy 2800
 aspiration in arthritis 2910
 technic 2801 2919
 capsule laceration, 3055
 degenerative See *Osteo-arthritis*
 dislocations diff diag (Table) 2810
 fractures diff diag (Table) 2810
 injuries 325
 treatment 3263
 locking 2962
 diff diag (Table) 310
 mic 2962
 motility abnormal diff diag (Table) 2803
 dumished, diff diag (Table) 2810
 motion in fracture 3000
 pain diff diag (Table) 2802, 2803
 referred diff diag (Table) 2803
 in rheumatic fever treatment 194
 pathology 2800
 physiology 2800
 pyogenic infection of diff diag (Table) 2934
 Judgment definition 1299
 Jugular veins disturbances diff diag (Table) 3316
 external 3317
 internal phlebitis 2157
 ligation indications 3295
 Jung free association test, 2527
 Junket, 637
 Juvenile wart, 3291
 methods of treatment, 3291
 Kahlen's disease See *Myceloma, multiple*
 kala-azar 634. See also *Leishmaniasis*
 Kaposi's disease See *Sarcoma, idiopathic mul-*
 tiple hemorrhagic
 Karell diet, 870
 Karwinskia latifolia in leprosy 277
 Keller Blake splint (Fig) 3001
 Keloids 3166 3167
 of ear diff diag (Table) 2113
 eruption in, diff diag (Table) 3162
 (Fig) 3160
 Kelsner vaccine in hydrophobia, 440
 Kenna treatment for polyomyelitis 463
 evaluation, 462
 Kephane hydrochloride, uses 3120 3977
 styptic 3883
 Keratin, function 8100
 Keratinic precipitates, in endocystitis, 1638
 Keratitis 1626
 diagnosis, 1630
 etiology 1626
 herpetic 1629
 (Fig) 1628
 hypopyon, 1629
 interstitial, 1629
 (Fig) 1628
 necrotizing 1629
 staphylococcus toxoid in 1531
 superficial 1629
 punctate 1629
 treatment, 1630
 Keratoconjunctivitis epidemic 1624
 (Fig) 1624
 neutralization test in, 59
 serologic test in (Table) 59
 treatment of tyrothricin in, 106
 phlyctenular 1630
 allergen in 329
 Keratoderma climactericum diff diag (Table) 3210 3 07
 palmaris et plantaris 3153 3207
 diff diag (Table) 3260
 Keratolytic(s) 3112
 bath technic, 3133
 carbon dioxide as, 3133
 ointment prescriptions 3137
 Keratomalacia, vitamin A in 1553
 Keratoplasty 1637
 Keratosis arsenicalis 3216
 bleuorrhagica, 3237
 diff diag (Table) 422 3297
 (Fig) 3239
 rash in, diff diag (Table) 3290
 diff diag (Table) 3166 3214 3258 3297
 due to drugs, 3339
 follicularis, 3153
 diff diag (Table) 3267 3, 69 3337
 (Fig) 3159
 in infancy diff diag (Table) 3146
 occupational 3213
 seborrheal 3217
 diff diag (Table) 3269
 pigmentation in diff diag (Table) 3156
 senile 3216
 diff diag (Table) 3333

- Intrathoracic disorders febrile, diff diag (Table) 404
- Intra uterine fractures 2777
- rings Gräfenberg 2506
- Intravascular disturbance fever in 25
- thrombosis 1123
- Intravenous administration of soluble sulfo-
namides 99
- anesthesia in minor surgery 3925
- technic, 3924
- fluids in infancy dosage 2744
- immunization 80
- infusion by drip method 3775
- (Fig) 3775
- of serum 87
- therapy in meningitis 217
- technical difficulties 3776
- injection of serum 85
- by syringe 3773
- (Fig) 3772 3773
- reactions 3774
- Intraventricular conduction defect 880
- hemorrhage 1441
- pressure curve 776
- Intubation intestinal 1823
- Intussusception 1876
- (Fig) 1876
- in infancy diff diag (Table) 2730
- swellings in diff diag (Table) 1896
- Inverse psoriasis 3416
- Involuntary nervous system See Nervous
 system involuntary
- Iodamoeba butschli, differentiation of (Table)
 528
- Iodine 607
- as disinfectant 5120
- exacerbation, 1213
- fastness 1213
- in goiter prophylaxis dosage 1219
- Gram's preparation 49
- in infancy dosage 2744
- metabolism 607 1199
- preparations, 612
- requirements normal 608
- skin reactions caused by 3340
- sources, 608
- therapeutic test in hyperthyroidism 1215
- therapeutics 608 5874
- therapy in blastomycosis 405
- in coronary artery syphilis 1012
- in deep dermatophytoses 3316
- in hypertension, 913
- in hyperthyroidism 1215
- in leukemia, 1107
- radioactive 1214
- toxicology 912
- Iodine-Basedow 609 1220
- Iodism 612
- oral manifestations 1678
- Iodobismutol with saligenin dosage (Table)
 123
- Iodochlorhydroxyquinoline evaluation, 3120
- Iododermas 3344
- chlorides in treatment, 3342
- Iodoform evaluation 3120
- Iodamoeba butschli, differential characteristics
 (Table) 5733
- Iontophoresis in eye disorders 1550
- (Table) 3792
- Ipecac dosage 1757
- in obesity 693
- in vagal stimulation 883
- Iprat calcium dosage (Table) 3937
- sodium dosage (Table) 3837
- Iridectomy for acute glaucoma 1554
- indications for 3924
- Iridocyclitis 1633
- in periarthritis nodosa 1028
- symptoms (Table) 1571
- Iridodonesis, 1573
- Iris anatomy 3616
- Irish moss in diet, 1826
- Iritis See also Iridocyclitis
- acute diff diag (Table) 1618
- (Fig) 1631
- Iron 606
- in blood (Table) 5
- diet high in, 692
- dietary sources 606
- foods rich in (Table) 607
- lung 3767
- metabolism 606
- in pregnancy dosage 2646
- preparations (Table) 1018
- requirement 606
- therapeutics (Table) 1048
- Iron-deficiency anemia 1085
- diff diag (Table) 1059
- Iron vitamin diet high indications for 1032
- Irradiation See Radiotherapy Roentgenotherapy
 and Ultraviolet irradiation
- Irrigation of bladder 2255
- of colon 1824 2292
- of ear 2027
- of lacrimal passages 1541
- nasal 2027
- peritoneal 2233
- urethral 2254
- Irritable colon, 1846
- Ischemia, definition 10
- myocardial 800
- renal 2273 See also Renal ischemia
- Ischemic contracture 3025
- Isihara charts, for color sense tests 1541
- Islands of Langerhan, adenoma 1242
- Ischemagglutinins 80
- Isotonus cardiac (Table) 779
- Israel position, 3588
- Itching See Pruritus
- Ivory face diff diag (Table) 3509
- Ivy hemostasis bleeding time 3706
- JACKET Minerva (Fig) 3006
- Jackson's membrane congenital 1023
- Jamaica vu, definition 1293
- Janeway lesion in endocarditis 1023
- (Fig) 1022
- Japanese B encephalitis 415
- neutralization test in 59
- serologic test in (Table) 59
- Jar Filde's 140
- Jaundice 1941
- after arsenical therapy 192
- catarrhal 1979
- diff diag (Table) 1955
- laboratory aids in 1952
- fever in, diff diag (Table) 1006
- hemolytic 1951
- hepatic 1951

- Jaundice icterus index in 1948
 in infancy diff diag (Table) 3146
 infectious 360
 animal inoculation in (Table) 62
 diagnosis by smear in (Table) 50
 diff diag (Table) 28
 eye in (Fig) 359
 serologic test in (Table) 59
 in lobar pneumonia, 21.9
 of newborn, diff diag (Table) 2761
 obstructive 19 3
 diff diag (Table) 1951
 pigmentation in diff diag (Table) 3210
 posthepatic 2046
 pruritus in diff diag., 3170
 in pulmonary infarction, 2038
 rheumatoid arthritis and, 2921
 ■ Rocky Mountain spotted fever 378
 serum ■
 anti infectious, evaluation 84
 validity of tests in, 1952
 in vitamin B deficiency (Fig) 618
 in yellow fever 478
- Jaw ankylosis 1689
 (Fig) 1688
 dislocations manifestations (Table) 2965
 treatment (Table) 2965
 disturbances, diff diag (Table) 1705
 fractures 5013
 treatment (Table) 3004
 osteoma, 1716
 sarcoma 1719
 subluxations manifestation (Table) 2965
 treatment (Table) 2965
 tumor 1712
 (Fig) 1718
- Jejunal feeding formula for 687
 Jejunostomy 1759
 indications for *203
- Jensen's disease 1635
- Joint(s) See also individual joint
 anatomy 2800
 aspiration in arthritis 2910
 technic 2801 3949
 capsule laceration, 3055
 degenerative See Osteo-arthritis
 dislocations diff diag (Table) 2810
 fractures diff diag (Table) 2810
 injuries 2952
 treatment 28 3
 locking 2962
 diff diag (Table) 810
 mice 2962
 motility abnormal diff diag (Table) 2808
 diminished diff diag (Table) 2810
 motion in fracture 3000
 pain diff diag (Table) 2800 2803
 referred diff diag (Table) 2803
 in rheumatic fever treatment 194
 pathology 2800
 physiology 2800
 pyogenic infection of diff diag (Table) 2934
- Judgment definition 1998
- Jugular veins disturbances diff diag (Table) 3316
 external 3317
 internal phlebitis 2157
 ligation indications 3205
- Jung free association test, 1327
- Junket, 637
- Juvenile wart 3201
 methods of treatment, 3292
- KARLEN'S disease See Myeloma, multiple
- Kala azar 534 See also Leishmaniasis
- Kaposi's disease See Sarcoma idiopathic multiple hemorrhagic
- Karell diet 670
- Karwinskia latifolia in leprosy 277
- Keller Blake splint (Fig) 3001
- Keloids 3166 3167
 of ear diff diag (Table) 2113
 eruption in, diff diag (Table) 3162
 (Fig) 3160
- Kelser vaccine in hydrophobia, 440
- Kenny treatment for poliomyelitis 463
 evaluation, 462
- Kephene hydrochloride, uses 3120 3977
 styptic 3983
- Keratin, function, 3100
- Keratic precipitates in endocyclitis 1633
- Keratitis 1626
 diagnosis, 1630
 etiology 1626
 herpetic, 1622
 (Fig) 1628
 hypopyon 1629
 interstitial 1629
 (Fig) 1628
 sclerosing 1629
 staphylococcus toxoid in 1551
 superficial, 1628
 punctate 1628
 treatment 1630
- Keratoconjunctivitis epidemic 1624
 (Fig) 1624
 neutralization test in, 59
 serologic test in (Table) 59
 treatment of tyrothricin in, 106
- phlyctenular 1630
 allergen in, 253
- Keratoderma climactericum diff diag (Table) 3219 3297
 palmaris et plantaris 3153 3297
 diff diag (Table) 3360
- Keratolytic(s) 3112
 bath, technic, 3133
 carbon dioxide as 3138
 ointment prescriptions 3137
- Keratomalacia, vitamin A in 1553
- Keratoplasty 1557
- Keratosis arsenical, 3216
 blepharospasm, 3257
 diff diag (Table) 420 3297
 (Fig) 3258
 rash in diff diag (Table) 3290
 diff diag (Table) 3165 3214 3268 3297
 due to drugs, 3339
 follicular 3153
 diff diag (Table) 3267 3363 3382
 (Fig) 3159
 in infancy diff diag (Table) 3146
- occupational 3215
- seborrheal 3217
 diff diag (Table) 3369
 pigmentation in diff diag (Table) 3156
- senile 3216
 diff diag (Table) 3383

- Keratoses semle (Fig) 3201
 pigmentation in diff diag (Table) 3156
 Kerion celsi 3303
 diff diag (Table) 3439
 Kernicterus 1008
 diff diag (Table) 2761
 Kernig sign 3572
 in meningitis 213
 Ketogenic diet 675
 in epilepsy 1517
 Ketosis mechanism 690
 Lew Gardens spotted fever 386
 Kidney See also *Renal*,
 aberrant vessels 2297
 ligation 2297
 abscesses 2359
 agenesis unilateral 2287
 amyloidosis 2362
 pathology 2363
 anatomy 2227
 aneurysm 2330
 anomalies blood vessels 2296
 (Fig) 2297
 arteriosclerotic (Fig) 902
 artery occlusion 2329
 in bacterial endocarditis 2367
 bilateral cortical necrosis 2330
 calculus in 1228
 circulatory disturbances of 2368
 clinical disturbances 2362
 cloudy swelling 2362
 congestion chronic passive 2368
 diff diag (Table) 2361
 cysts serous 2291
 displacement congenital 2293
 (Fig) 2293
 double 2288
 echinococcus cyst of 2351
 in endocarditis 1022
 enlargement diff diag (Table) 2230
 in essential hypertension appearance 2369
 floating 2293 (Fig) 2295
 function in hypertension 906
 tests 3687
 concentration 2241 3687
 dilution 2242 3687
 phenolsulphonphthalein, 2242 3689
 urea clearance 2245
 functional disorders See *Renal ischemia* and
 Renal insufficiency
 fused 2290
 Goldblatt 2273
 in hypertension 903
 horseshoe 2290
 (Fig) 2290
 hypernephroma (Fig) 2328
 in hypertension 903
 infarcts 2330
 infections 2362
 injuries to 2302
 diagnosis, 2368
 (Fig) 2309
 subperiosteal 2308 2330
 treatment 2309
 malformations 2285
 necrosis 2330
 palpation 2366
 parenchymatous degeneration 1035
 diff diag (Table) 2361
 polycystic disease of 2368 2291
 Kidney polycystic disease of (Fig) 2291 See
 also *Polycystic kidney*
 solitary 2287
 supernumerary 2288
 tuberculosis 2317
 diagnosis 2350
 (Fig) 2347 2348 2349
 lesions in 2348
 tumors 2326
 in urinary obstruction alterations in 2289
 vascular disease of 2368
 diffuse diff diag (Table) 2361
 Klebsiella pneumoniae 218
 streptomycin in 378
 Klebsiella Loefler bacillus 302
 Klippel Feil syndrome 2817
 diff diag (Table) 2810
 Klumpke's paralysis in infancy 2776
 deformity in, diff diag (Table) 2934
 Knee dislocation 2979
 (Fig) 2980
 treatment (Table) 2977
 examination (Table) 3574
 fracture 3045
 histoplasmosis of (Fig) 304
 hypertrophic changes in (Fig) 2838
 internal derangements of 2960
 joint aspiration (Fig) 3049
 coronal section through (Fig) 2800
 loose bodies in 2962
 osteoarthritis dissections of 2962
 semilunar cartilage rupture 2960
 diff diag (Table) 2810
 manipulation in 2961
 tuberculosis 2945
 (Fig) 2944
 Knight spinal brace in back sprain 3070
 Koch Weeks conjunctivitis 1621
 Kocher maneuver in dislocated shoulder
 (Fig) 2973
 Kochia geographic distribution of (Fig) 360
 Koebner phenomenon in lichen planus 3301
 Köhler's disease 2929
 Koilonychia 3458
 (Fig) 3452
 Koplik's spots (Fig) 410
 Korsakoff syndrome 1383
 Kraurosis vulvae 597
 diff diag (Table) 3275
 Krukenberg tumor 2572
 Kuhlmann Anderson test 1325
 Kupffer cells function 1947
 Kussmaul breathing in diabetes mellitus 1251
 Kyphoscoliotic heart disease cause (Table) 963
 manifestations (Table) 968
 Lymphos 3061
 adolescent 2926
 (Fig) 2927
 development, 3055
 diff diag (Table) 3067
 LABIAL frenum elongated 1683
 Labor 2677
 caudal anesthesia in conduct 2709
 conduct, 703
 duration 2697
 examination in rectal 2701
 vaginal 2701

- Labor indications for consultation 2714
 mechanisms, 2698
 prodromes, 2697
 prolonged 2714
 stages 2697 2, 06
 stormy 2714
 Laboratory examinations 3609
 bacteriologic 43 52
 blood, 3692
 cultures 52
 in diagnosis 44
 duodenal contents 3726
 gastric contents 3721
 skin tests office chemicals for 3661
 sputum 3719
 stool 3727
 types, 3659
 urine 3666
 office, apparatus for list 366
 equipment, 3661
 services public health, 3659
 Labyrinthine disturbances dyspepsia in diff
 diag (Table) 2771
 Labyrinthitis 2147
 acute, 1436
 Lacerated wound treatment 3967
 (Fig) 3003
 Lacrimal apparatus anatomy 3612
 (Fig) 3613
 gland accessory extirpation 1557
 anatomy 3613
 enlargement in Mikulicz's disease 1613
 inflammation acute 1613
 chronic 1614
 passages anatomy 3613
 irrigation 1514
 probing 1557
 punctum eversion etiology (Table) 1569
 symptoms 1569
 occlusion etiology (Table) 1569
 symptoms (Table) 1569
 sac extirpation 1557
 incision 1557
 Lacrimation See *Tearing*
 Lacrimators poisoning by 745
 Lactation, 2719
 conception and 2507 2700
 diet in 663
 disturbances 2719
 in newborn 2778
 suppression of androgen in 2520
 in Sumner's disease 1170
 stilbestrol in 2719
 transfer of drugs in 810
 Lactic acid in gastric juice test for 3725
 milk, 636
 in *Trichomonas* infestation, 3121
 Lactobacillus acidophilus in intestinal tract 149
 Lactogenic hormone (Table) 1154
 Lactation in digestion 588
 in infant feeding formula 2750
 source 588
 therapeutics 3824
 Lactovuria, diff diag (Table) 3677
 Laennec's cirrhosis 1909
 Lagophthalmos etiology (Table) 1569
 symptoms (Table) 1569
 Lagrange operation for secondary glaucoma,
 1558
 Laminagraphy 3075
 Laminectomy indications for 3994
 in spinal cord tumors 1434
 Landry's ascending paralysis, 461
 Lange's colloidal gold test 3736
 Lanolin uses 3121
 Laparoscopy 1900
 Laparotomy in perforation 235
 Lard, food value of 650
 Larkspur in lice infestation, 3121
 Larocaine, 3915
 in respiratory disturbances 2029
 Laryngeal diphtheria, 307
 nerve injury after thyroidectomy 1216
 recurrent paralysis 1483
 superior paralysis of 1489
 stridor diff diag (Table) 2732
 manifestations (Table) 2043
 (Table) 2043
 Laryngectomy 2075
 indications for 3994
 Laryngismus stridulus diff diag (Table) 2732
 stridor in, diff diag (Table) 2106
 Laryngitis, acute 2159
 chronic, types 2161
 cystic, 2163
 membranous, 2161
 polypoid, 2163
 subglottic 2164
 tuberculous (Fig) 2180
 vesicular 2161
 Laryngocoele 2043
 Laryngofissure in laryngeal cancer 2073
 Laryngoscope (Fig) 2025
 Laryngoscopy direct indications 20 6
 indirect, mirror image in, 3607
 technic, 3605
 in infancy indications 2735
 peroral, 2025
 Laryngotomy indications for 3993
 Laryngotracheitis acute, 2164
 diff diag (Table) 2732
 Larynx 3512
 abnormalities of diff diag (Table) 3606
 abscess 2164
 anatomy 3604
 anesthesia 2091
 anomalies congenital manifestations,
 (Table) 2043
 treatment (Table) 2043
 in stridor diff diag (Table) 2732
 burns of 2046
 carcinoma 2072
 (Fig) 2073
 chondritis 2164
 edema angioneurotic 2101
 examination 3605
 foreign bodies in 2046
 inflammations diff diag (Table) 3606
 lesions mechanical (Table) 2046
 papilloma, estrogen therapy in 2516
 paralysis 2091
 (Fig) 2092 2093
 posterior aspect (Fig) 3513
 sagittal section (Fig) 2021
 spasm 2023
 stridor 2043
 tumors benign 20 6
 Last sign 3572
 Lassar ointment in dermatitis 3333
 in gynecologic infections dosage 2501

- Lassar ointment prescription 3115 3132
 Lateral sinus anatomy 1446
 thrombosis 1447
 Latin abbreviations in prescription 3802
 Lavage antral in sinusitis 2128
 gastric 1749 1751
 Laughing gas anesthesia in major surgery 4003
 disadvantages 4003
 Laurence Moon Biedl syndrome 1166
 diff diag (Table) 1333
 Laxatives 1827
 Epsom salts as dosage 613
 in infancy dosage 2745
 poisoning diff diag (Table) 241
 Lead acetate as astringent evaluation 3121
 colic treatment 765
 encephalopathy 764
 line in plumbism 763
 (Fig) 1675 1677
 poisoning 762
 acute 764
 diagnosis 764
 hemolytic anemia in 1065
 prognosis 764
 psychosis due to 1383
 shock in 933
 treatment, 764
 uric acid level in, diff diag (Table) 737
 Leather bottle stomach 1814
 Leber's atrophy 1640
 Lederer's hemolytic anemia 1073
 diff diag (Table) 1060 1087
 Ledger book 4050
 Lee and White method for coagulation time 3706
 Leech bite 8196
 Leg(s) See also *Extremities lower*
 arms and, pulse difference in diff diag (Table) 918
 dermatoses of diff diag (Table) 3378
 dislocation treatment (Table) 2977
 edema hereditary 1400
 in vitamin B deficiency (Fig) 618
 elephantiasis of causes (Table) 969
 manifestations (Table) 969
 erythema nodosum of in sulfathiazole therapy (Fig) 90
 exercises 3758
 fracture treatment (Table) 3038
 involvement in peripheral vascular disease (Table) 906
 lengthening 2814
 pulse difference in diff diag (Table) 918
 raising test 3084
 positive in spondylitis deformans 2860
 support after fracture 3001
 swellings diff diag (Table) 2806
 syphilid of (Fig) 333
 variciform syphilid of (Fig) 3280
 Legg Calvé-Perthes disease 2927
 Legumes food value of 844
 Leiomyoma, 3207
 Leishmania brasiliensis 3317
 donovani (Fig) 48
 life cycle (Fig) 3318
 Leishmaniasis 634
 Americana 3317
 (Fig) 3317
 cutaneous manifestations (Table) 3246
 diagnosis 634
 Leishmaniasis diagnosis, methods 3246
 by smear in (Table) 81
 diff diag (Table) 29 3268 3309
 fly as vector in (Table) 42
 hyperproteinemia in diff diag (Table) 733
 hypocalcemia in, diff diag (Table) 724
 liver in (Fig) 635
 mite as vector in (Table) 42
 serologic test in (Table) 59
 skin test in (Table) 69
 treatment 334
 tropical cutaneous 3319
 (Fig) 3319
 urica stibamine in 133
 Lens of eye crystalline anatomy 3618
 displacement 1573
 extraction, indications for 3004
 Lenses contact 1538
 in eyestrain 1537
 protective 1538
 tinted 1538
 Lenticonus definition 1663
 Lenticular degeneration 1418 1977
 diff diag (Table) 1333
 Leonine facies 274
 Leontiasis ossium diff diag (Table) 2798 2878
 Lepothrix 3305 3450
 diff diag (Table) 3439
 Lepra cells (Fig) 274
 Lepromin antigen in leprosy 276
 Leprosy 273
 bacteriology 273
 clinical manifestations, 274
 diagnosis 276
 methods 3246
 by smear in (Table) 81
 diff diag (Table) 412 3263
 diphtheria toxoid in 277
 epidemiology 273
 lepra cells in (Fig) 274
 nerve changes in 274
 neural 274
 nodular (Fig) 275
 ocular manifestations 1603
 pathology 273
 penicillin in evaluation 111
 peripheral nerves involvement, diff diag (Table) 1461
 pigmentation in diff diag (Table) 3155
 quarantine data on (Table) 88
 rash in diff diag (Table) 3222
 sarcoïdal 276
 (Fig) 276
 vs sarcoidosis 276
 serologic reaction in, 276
 streptomycin in 277
 syringomyelia vs 276
 treatment, 277
 tubercular (Fig) 273
 Leptospira acterohæmorrhagæ 360
 infection 360
 taxonomic key to 329
 Lesbianism diff diag (Table) 2431
 Letterer-Siwe's disease See *Xanthomatosis*
 Leukemia, 1100
 acute granulocytic (Fig) 1104
 aleukemic 1103
 basal metabolism in diff diag (Table) 720
 chronic leukemic granulocytic (Fig) 1104
 lymphocytic (Fig) 1104

- Leukemia cutis** 3387
 diagnosis 1103
 diff diag (Table) 3346 3393
 fever in diff diag (Table) 718
 hemogram in, 1102
 hyperuricemia in diff diag (Table) 737
 irradiation in, 1033
 lymphatic black tongue in (Fig) 1696
 bone marrow count in (Table) 1043
 lymphocytosis in diff diag (Table) 1093
 megakaryocytic 110
 myeloid, basophilus in, diff diag (Table) 1093
 bone marrow count in (Table) 1043
 ophthalmic manifestations 1590
 oral manifestations 1677
 radioactive phosphorus in, 605
 treatment, 1106
 arsenic in 126
- Leukemias** 3387
- Leukocidin**, bacterial virulence and 145
 in streptococci 139
- Leukocytes** count 3603
 in infancy indications 2750
 disturbances 1096
 normal appearance 3600
 (Fig) 1037 1039
 value (Table) 1046
 in pertussis 280
 polymorphonuclear normal count (Table) 1043
 stimulants in infancy dosage 2745
 list, 3607
- Leukocytosis** 1096
 in bacillary dysentery 245
 in coronary occlusion 934
 diff diag (Table) 1097
 in encephalomyelitis 453
 in endocarditis 1020
 in erysipelas 169
 in erythroblastosis foetalis 1070
 in infectious mononucleosis 467
 in liver abscess 1931
 in lobar pneumonia 2175
 in meningococcal meningitis 213
 in poliomyelitis 460
 in rheumatic fever 191
 in Rocky Mountain spotted fever 378
 in scarlet fever 178
 in septic sore throat 186
 in St Louis encephalitis 457
- Leukoderma** coli 3285 See also *Syph* *ioderma*
 diff diag (Table) 3404
 endocrinologic, diff diag (Table) 3404
- Leuko-erythroblastic anemia**, 1091
- Leukonychia** 3455
 stellata (Fig) 3452
 totalis (Fig) 3452
- Leukopenia** 1090
 in brucellosis 515
 in dengue fever 407
 infectious 471
 in sixth disease 420
 in sulfonamide therapy 96
 in typhoid fever 234
- Leukopenic index** 1042
- Leukoplakia** 1691
 of bladder pathology 2343
 buccal estrogen therapy in 2016
 cutaneous manifestations 3213
- Leukoplakia**, diff diag (Table) 3211 3215
 3219 3274 3404
 (Fig) 3201
 syphilitic, 3287
 of ureter 2346
 of vulva 2597
- Leukorrhea** diff diag (Table) 2 85
- Leukosarcoma** 1105
- Levine tube** 1751
- Levulosuria**. See *Fructosuria*.
- Lewandowsky tubercle** of diff diag (Table) 3163
- Lewyite action** 750
 burns treatment, 751
 poisoning antidote for 125
- Leydig cells** 2397
- Libido abnormalities** diff diag (Table) 2491
 Freud's definition 1337
- Lilman-Sacks disease** 1019 See also *Endo-*
 carditis atypical verrucosa
 cutaneous manifestations 3400
 renal complications in, 2372
- Lice** See *Lous*
- License medical** 4035
- Lichen amyloidosis** 3243
 planus 3389
 diff diag (Table) 412
 et acuminatus atrophicus 3302
 (Fig) 1669 3397
 ocular manifestations, 1665
 oral manifestations 1667
 of penis 2458
 pigmentation in diff diag (Table) 3155
 rash in diff diag (Table) 3282
 treatment 3393
 types 3392
 scrofulosorum 3209
 diff diag (Table) 3 34 3360
 simplex 3163
 chronicus 3229
 diff diag 3230
 (Fig) 3160
- Lichenification** 3168
 definition 3101
- Lichenoid parapsoriasis** 3401
- Lid** See *Eyelid*
- Life insurance** prognosis and 4028
 span of cells 6
- Ligament(s)** cruciate of knee rupture 2902
 of Treitz herniation 1804
- Light adaptation**, examination for 3627
- senile disturbances** diff diag (Table) 1335
 examination 1541
- Lightening sign** in pregnancy 2624 2697
- Lime luminant**, evaluation 3117
- Lump in adult** diff diag (Table) 3406
 diff diag (Table) 2832
 in infancy causes (Table) 2736
- Linear mole** 3205
- Linens disinfection** of 68
- Lingual tonsils** 3602
 tonsillitis 2162
- Liniments** 3135
- Linzenmeyer method** for blood sedimentation
 rate, 3707
- Lion face** diff diag (Table) 3506
- Lip angioma** 1715
 chance (Fig) 335
 cleft, 1683
 (Fig) 1681

- Lip cosmetics chemistry 3141
 cyst (Fig) 1713
 disturbances diff diag (Table) 1635
 epithelioma 1717
 (Fig) 1718
 examination 3035
 freum elongated 1633
 herpes 434
 (Fig) 2289
 mucous patch of in syphilis (Fig) 338
 scarring of in riboflavin deficiency (Fig) 628
 syphilis of (Fig) 3280
- Lipemia 727
 in diabetes mellitus 1250
 diff diag (Table) 733
- Lipid(s) compound 591
 histiocytosis 1131
 metabolism 694
 disturbances 737
 neptrosis 2389
 pneumonia 2048
 differentiation from tuberculosis 2051
 (Fig) 2049
- Lipiodol in infancy dosage for bronchoscopy 2745
 injection into subarachnoid space (Fig) 3075
- Lipocae 1937
- Lipodosis 1133
 hepatic manifestations 1978
- Lipoma 2406
- Lipomatosis multiple 3000
- Lipstick dermatitis (Fig) 300
- Liquid diet, 603
 measures equivalents 3801
- Liquor ammoniac anisatus, dosage 3823
 in cough dosage 2052
 in croup 2165
 in infancy 2744
 carbonis detergens 3308
 in dermatitis 3333
 prescription 3159
- Lithopary indications 3995
- Litigation, fracture handling and, 2960
 (Table) 2933
- Little's disease See Spastic diplegia
- Littre's glands anatomy 2308 3633
- Liver See also Hepatic
 abscess 1980
 in amebiasis 625
 diagnosis 50
 (Fig) 526
 amyloidosis 1978
 anatomy 3558
 arsenamine action in 121
 artery occlusion 1960
 atrophy acute yellow 1968
 subacute red 1969
 bed hyperemia 1956
 blood supply to 1915
 carcinoma primary 1962
 metastatic 1962
 cells function 1916
 hemorrhagic disease and 1110
 cirrhosis 1963
 in backward failure 344
 (Fig) 9
 cloudy swelling of 1977
 congestion pain in right upper quadrant
 diff diag (Table) 1959
 passive 1957
- Liver damage in sulfonamide therapy 96
 death 1953
 disturbances 1950
 abdominal rigidity in diff diag (Table) 1746
 clinical 1955
 hematemesis in, diff diag (Table) 1716
 mechanical 1956
 metabolic 1963
 nosebleed in diff diag (Table) 9723
 splenomegaly in diff diag (Table) 1109
 vascular 1956
 dulness 3067
 diff diag (Table) 553
 echinococcus disease of 1953
 enlargement, diff diag (Table) 1073
 examination 3560
 extract in dermatitis herpetiformis 3372
 in enteritis due to vitamin B deficiency 1839
 in exfoliative dermatitis 3342
 in infancy dosage 2744
 injection technic, 1081
 in pernicious anemia dosage 1087
 preparations (Table) 1048
 therapeutics (Table) 1048
 in renal amyloidosis 2366
 in seborrheic dermatitis 3433
 therapeutic test in pernicious anemia, 1080
 in urticaria 3349
 in fat metabolism 305
 fat storage in 596
 fatty infiltration 1977
 function tests 1947
 excretory 1947
 metabolic 1949
 glycogen infiltration 1978
 infections 1979
 hepatomegaly in diff diag (Table) 1973
 insufficiency 1959
 in kala azar (Fig) 330
 lardaceous 1978
 lepra cells in (Fig) 274
 lobule morphology 1946
 metabolic anomalies in lipodosis 1978
 nutmeg 1937
 parenchymatous degeneration 197
 anemia in 1080
 physiology 1346
 projection of on chest wall 3327
 ptosis 1957
 in Rocky Mountain spotted fever 38
 syphilis 1963
 tumours benign 1962
 in typhoid fever 209
- Loa loa 3325
 life cycle 3325
 (Fig) 3324
 microfilaria (Fig) 3325
- Loiasis 3325
 fly as vector in (Table) 42
- Lobar pneumonia 2171 See also Pneumonia
 lobar
- Lobectomy 2039
 in bronchiectasis 2082
 indications for 3994
- Lobeline alpha in infancy dosage 2744
- Lobotomy pre frontal, in psychotherapy 1931
 in schizophrenia, 1268
- Localization phenomena as diagnostic aid 44

- Lochia after delivery 2715
 Locking of joint 2962
 Lockjaw 291 See also *Tetanus*
 Locomotor ataxia 1461
 disturbances in infancy list, 2759
 system 2793. See also *Skeletal system*
 congenital abnormalities 2316
 infections, 2894
 metabolism disturbances 2350
 methods of diagnosis and treatment, 279.
 neoplasms 2335
 neurogenic disturbances, 2318
 traumatic disturbances, 2957
 vascular disturbances 2956
 Loeffler stain, 49
 Loeffler syndrome 2104
 Loewe method of heparinization 1051
 treatment in endocarditis 1024
 Lopen in rheumatoid arthritis 2922
 Lorain's syndrome See *Pituitary infantilism*
 Lordosis 3063
 cervical development, 3053
 diff diag (Table) 3063
 lumbar development, 3055
 Lotio alba, prescription 3129
 Lotions in alopecia, prescriptions 3415
 hand, chemistry 3142
 Louping ill, 445
 Louse body 3185
 crab 3185
 head 3182
 infestation See *Pediculus*
 ovector (Table) 42
 Louse-borne relapsing fever 338
 typhus classification (Table) 367
 Lower extremities See *Extremities lower*
 Ludwig's angina 1708
 Lugol in infancy dosage, 2744
 Lumbago diff diag (Table) 3072
 Lumbar lordosis development 3058
 pain, diff diag (Table) 2274
 upper diff diag (Table) 2940
 puncture diagnostic, in head injuries 1433
 in encephalopathies 1501
 findings in otogenic meningitis 2148
 in hypertensive encephalopathy 916
 in infancy indications 2737
 in meningitis diff diag 2129
 in sub rachnoid hemorrhage 1446
 technic (Fig) 3782
 spine dislocation (Table) 2965
 fracture, 3009
 sympathetic ganglia injection technic 354
 transverse processes fracture of 3010
 Luminal dosage (Table) 3837
 Luminous heat, 3787
 (Fig) 3787
 Lunar caustic in skin diseases 3127
 Lung See also *Pulmonary*
 abscess apurid 2214
 differentiation from putrid abscess 2215
 diff diag (Table) 405
 (Fig) 2214
 in lobar pneumonia 2180
 penicillin in x ray 108 109
 putrid 2215
 as apurid abscess 2215
 postoperative diff diag (Table) 4016
 roentgenography in, 2216
 (Fig) 2217 2218
 Lung abscess, putrid, site 2216
 spot localization 2216
 absence (Table) 2043
 actinomycosis 491
 (Fig) 491
 anatomy 3530
 aspergillosis 493
 (Fig) 2213
 auscultation of technic 3537
 blastomycosis (Fig) 2211
 carcinoma, metastatic, 2081
 primary 2078
 (Fig) 2079
 coccidioidomycosis (Fig) 500 2242
 congestion, in backward failure 945
 contusions signs (Table) 2017
 cryptococcosis (Fig) 497
 cystic disease 2044
 (Fig) 2045
 emboli postoperative diff diag (Table)
 4016
 embolism 2086 See also *Pulmonary em-
 bolism*
 emphysema 20 6
 (Fig) 2033
 (Fig) 3531
 fluke 2215
 furunculosis diff diag (Table) 403
 hemorrhagic infarct of (Fig) 13
 hypostasis 2086
 irritants gases 746
 lobes of anatomy 3327
 massive collapse 2053. See also *Pulmonary
 collapse*
 monilia of (Fig) 503
 motor in asphyxia 2770
 puncture diagnostic 3344
 torulosis (Fig) 2211
 tuberculosis See *Tuberculosis*
 Lunol dosage 135
 Lupus erythematosus acute disseminated,
 3399
 diff diag (Table) 3398 3401
 (Fig) 3400
 lesions in 3400
 chronic, 3395
 disseminated variety (Fig) 3597
 lesions in 3396
 diff diag (Table) 3163 3268 3382 3499
 disseminatus renal complications, 2372
 due to photosensitivity 3176
 of ear 3306
 diff diag (Table) 2113
 fever in diff diag (Table) 1007
 (Fig) 957
 manifestations (Table) 964
 of nose diff diag (Table) 2110
 oral manifestations 1657
 of palate (Fig) 1669
 milium disseminatus faciei 3263 3270
 diff diag (Table) 3268
 vulgaris 3 62
 diff diag (Table) 3163 3263 3439
 of ear diff diag (Table) 3306
 (Fig) 3263
 of nose diff diag (Table) 3264
 oral manifestations 1673
 pigmentation in diff diag (Table) 3155
 Luteinizing hormone (Table) 1154
 Lutz-Splendore-Almeida disease 493

- Lye burns of esophagus 1736
 (ig) 1735
 Lymph flow physiology 703
 node biopsy 393
 cytology 1039
 diseases 1137
 in infancy examination 2733
 in typhoid fever 229
 Lymphadenitis cervical 1710
 in septic sore throat 186
 fever in diff diag (Table) 1007
 mesenteric 1887
 in infancy diff diag (Table) 2730
 treatment 3962
 Lymphadenocoele 966
 Lymphadenopathy axillary diff diag (Table) 3526
 cervical diff diag (Table) 3518
 in chronic leukemia 1100
 diff diag (Table) 1136
 in granuloma fungoides 3386
 jaundice with diff diag (Table) 1904
 mediastinal diff diag (Table) 405
 diff diag (Table) 2084
 Lymphangioma 3203
 cavernous 966 3204
 cystic 966
 simple 966 3203
 Lymphangitis fever in diff diag (Table) 1007
 treatment 3062
 Lymphatic(s) anatomy 3379
 disturbances abdominal rigidity in diff
 diag (Table) 1747
 examination 3379
 leukemia black tongue in (Fig) 1696
 bone marrow count in (Table) 1043
 mechanism of 785
 Lymphedema 1400
 diff diag (Table) 3379
 of legs 3157
 Lymphoblastoma (Fig) 3021
 follicular 1137
 Lymphocytes 3703
 cytology 1040
 normal count (Table) 1043
 in pertussis 280
 Lymphocytic choriomeningitis 448
 animal inoculation in (Table) 62
 diff diag (Table) 443 450
 neutralization test in 59
 serologic test in (Table) 59
 Lymphocytosis acute infectious 471
 in brucellosis 315
 diff diag (Table) 1093
 in typhoid fever 234
 Lymphogranuloma venereum 471
 antimony in 132
 diff diag., 472 3219
 (Fig) 470
 hyperproteinemia in diff diag (Table) 735
 lymphadenopathy in diff diag (Table) 1136
 neutralization test in 59
 of penis 2457
 serologic test in 59
 skin test in (Table) 59
 treatment 473
 of vulva 2591
 diff diag 2591
 Lymphopathia venereum See *Lymphogranuloma venereum*
 Lymphosarcoma 1137
 cutaneous manifestations 3227
 diff diag (Table) 3011
 of mediastinum (Figs) 2093
 of tonsil 2070
 Lymphosyngus as vector (Table) 42
 Lysol as disinfectant 3113
 Lysozyme (Table) 103
 MACERATING bath 3133
 Macrocephaly See *Hydrocephalus*
 Macrocheilia 1693
 Macrocytic hyperchromic anemia 1077 See
 also *Pernicious anemia*
 Macrogenitosomia praecox 1185
 Macroglossia 1695
 Macroonychia 3452
 Macrophage 75
 Macropsia diff diag (Table) 1535
 Macular atrophy 3403
 due to syphilis (Fig) 3403
 degeneration of eye (Table) 1501
 Macule(s) definition 3104
 oral diff diag (Table) 1668
 Maculopapular eruptions generalized diff
 diag (Table) 412
 localized diff diag (Table) 3390
 Madura foot See *Maduromycosis*
 Maduromycosis 3315
 diff diag (Table) 3097
 of foot (Fig) 3314
 Magendie solution dosage (Table) 3354
 Magenta tongue (Fig) 1674
 Magnesia milk of in infancy dosage 2 45
 Magnesium 613
 carbonate as cathartic 1830
 citrate as laxative 613 1830
 as dusting powder 3101
 magma as cathartic 1830
 preparations 613
 salts preparations 1755
 in convulsions 1518
 in epileptiform convulsions dose & 2379
 in toxemia 2643
 in serum (Table) 5
 sulfate as analgesic 613 3101
 as cathartic 613 1830
 in glomerulonephritis precautions 2357
 in hypertensive encephalopathy 916
 in infancy dosage 2443
 therapeutics 613 3324
 Magnifier binocular (Fig) 1551 3673
 Mal de Meleda 3153
 petit 1515
 Maladie de Roger See *Intraventricular septal defect*
 Malar bones fracture of 3013
 treatment (Table) 3004
 flush of face diff diag (Table) 3307
 Malaria 507
 blood smears in technic 516
 clinical manifestations 509
 diagnosis 515
 by smears (Table) 51 516
 diff diag (Table) 28 510
 estivo autumnal, 514
 mosquito as vector in (Table) 4

- Malaria, ocular manifestations** 1603
 pernicious 514
Plasmodium vivax in 507
 (Fig) 508
 prevention 521
 prognosis 515
 quarantine data on (Table) 66
 quartan, 513
 serologic test in (Table) 59
 tertian benign 513
 therapeutic, hyperpyrexia from 509
 treatment, 522
 anti infective agents in 53 516
 atabrine in 519
 epinephrine in, Ascoli treatment 3879
 plasmodochin in 519
 quinacrine in 520
 quinine in 516
 totsquine in 519
Male breast, disturbances 2473
 climacteric 2414
 androgens in 2406 2417
 feminization diff diag (Table) 2481
 genitalia anatomy 2634
 examination, 2610
 (Fig) 2397
 infertility diff diag (Table) 2419
 reproductive system 2393
 congenital abnormalities 2421
 disturbances 2408
 in infancy list, 2769
 examination methods 2402
 infections 2452
 low back pain in diff diag (Table) 30 3
 mechanical disturbances 2427
 neurologic disturbances 2439
 physiology normal 2338
 pathologic, 2408
 surgical therapy 2407
 treatment, methods 2403
 tumors 2439
 sterilization 250
Malignant degeneration caused by chronic infection 3215
 following dermatoses 3212
 in goiter 1408
 miscellaneous 3217
 radiant energy and 3 13
 hypertension 908
 ophthalmic manifestations 1687
 neoplasms 572 See also *Carcinoma*
 neutropenia 1096
 pustule 292 3273 See also *Anthrax*
 (Fig) 3 73
 tumors See *Carcinoma*
Mallein test in glaucoma 327
Malleolus fractures reduction (Fig) 3050
 treatment (Table) 3039
 walking plaster for 3051
Malleomyces mallei 3 7
Mallet finger 3037
Malnutrition in children 2783
 gait disturbances and (Table) 2736
 surgery and 3098
 type diet in 1052
Malocclusion 1663
Maloney test for sensitivity 310
Malpractice suits fracture healing and 989
Malta fever 314 See also *Brucellosis*
Maltase in digestion, 538
Maltose source 533
Malum coxae senilis 2861
Mammalian bites 3197
Mammary pain diff diag (Table) 892
Mandelic acid as urinary antiseptic 2256
Mandible actinomycosis of 3309
 cysts 1714
 (Fig) 1713
 dislocation 1697
 manifestations (Table) 2965
 treatment (Table) 2965
 fractures 1697 3013
 emergency treatment 1692
 treatment (Table) 3004
 osteomyelitis 1706
Mandrin, flexible for introduction of catheter
 (Fig) 2240
Manganese poisoning clinical manifestations
 (Table) 755
 diagnosis (Table) 755
 occupations susceptible to (Table) 755
 treatment (Table) 755
Mama definition 1300
Mantic-depressive insanity 1368
 diff diag 1370
 (Table) 1368
 electric convulsive therapy in, results 1372
 phase of depression in 1369
 of elation in 1369
 treatment 1371
Manipulation in cartilage dislocations 2061
 in low back sprain (Fig) 3064-3068
 in tennis elbow 2963
 treatment by 3766
 Walton (Fig) 3006
Manipulative surgery 3768
Mannerism definition, 1309
Mannitol hexamtrate 3693
Mansonella, life cycle 3321
Mantoux test technic 263 561
Manual expression of milk 1555
Mapharsen administration 119
 chemical structure 119
 dosage 119
 efficacy (Table) 1141
 in spicular infections 3113
 in yaws 353
Marasmus 2783
Marble bone disease See *Osteopetrosis*
 (Fig) 2880
 skin 3172
March fracture 2983 3033
 hemoglobinuria 1076
 diff diag (Table) 1074
Marchesava Michel syndrome 1075
Marie's cerebellar ataxia 1416
Marie Strümpell arthritis 2915
 spine (Fig) 2915
Marriage epilepsy and 1518
 mental disorders and 1285
 in rheumatic fever patients 199
 tuberculosis and 273
Marrow bone anemias 1090
 diff diag (Table) 1053
 bone count, 104
 normal (Table) 1043
 pathologic (Table) 1043
 cytology 1035
 mechanisms of abnormalities 1042
 infusion (Fig) 3777

- Marsupialization in echinococcus disease 1983
 Mascara, chemicals in 3149
 Masculinization in female 2547
 diff diag (Table) 2481
 hyperhidrosis in 3437
 Mask like facies diff diag (Table) 3509
 Masks for oxygen (Fig) 3828
 Masochism definition, 1901
 Massage 3766
 in after treatment of fractures 3002
 in chronic prostatitis 2471
 in chronic seminal vesiculitis 2167
 evaluation 3766
 in eye disorders, 1550
 in infectious arthritis 2910
 in obesity 699
 in rheumatoid arthritis 2919
 in tennis elbow 2063
 Mastalgia diff diag (Table) 892
 Mastectomy indications 258° 3094
 Mastication, 1055
 muscles paralysis 1481 1484
 Mastitis acute 2612
 complicating mumps 482
 chronic, cystic 2580
 of newborn, 2778
 tuberculous 2613
 Mastoid process 3611
 Mastoidectomy indications for 3904
 in otitis media 2148
 Mastoiditis complicating otitis media 2146
 scarlet fever 173
 diff diag (Table) 3608
 discharge in diff diag (Table) 2180
 (Fig) 2148 2147
 masking of by sulfonamide therapy 95
 Mastotomy indications for 3903
 Masturbation chronic, 2411
 Matrix, pattern 8
 Mattress in infectious disease III
 Maxilla fracture 3013
 treatment (Table) 3004
 osteomyelitis 1700
 Maxillary sinuses anatomy 3593
 cysts of 2136
 irrigation, 2136
 sinusitis, acute 2123
 Meals number of in weight loss 699
 type of normal adult 691 See also Diet
 Measles 409
 complications 414
 diagnosis 418
 diff diag (Table) 174 412, 415
 encephalitis 446
 epidemiology 44
 German 417 See also Rubella
 immunity to 409
 immunization against 416
 incubation period, 410
 Koplik spots in 411
 (Fig) 411
 ocular manifestations 1606
 oral manifestations 1670
 quarantine data (Table) 66
 rash in, diff diag (Table) 172
 symptoms other than rash in, diff diag
 (Table) 2790
 throat in, diff diag (Table) 3601
 transmission 409
 treatment, 415
 Meat in American dietary 639
 composition of (Table) 640
 dried food value of 637
 extracts food elements in 642
 handling 642
 in infant feeding 2755
 muscle food elements in, 642
 salted food value 637
 smoked food value 637
 Mebaral in epilepsy 1517
 Mecholyl dosage (Table) 3874
 in infancy dosage 2743
 in peripheral vascular disease 908
 in vagal stimulation 883
 Meckel's diverticulum 1864
 (Fig) 1865
 inflammation in infancy diff diag (Table)
 2730
 umbilical pain in diff diag (Table) 1887
 Media for bacterial growth III 140
 Median nerve block 3920
 injuries motor signs in (Table) 1490
 Mediastinal lymphadenopathy diff diag
 (Table) 405
 Mediastinitis acute 2225
 chronic 2224
 diff diag (Table) 405
 Mediastinopericarditis in chronic pericarditis,
 1011
 Mediastinum, anatomy 3331
 anterior aspect (Fig) 3310
 dermoid cyst of (Fig) 2082
 displacement, diff diag (Table) 2084
 disturbances diff diag (Table) 2084
 emphysema, manifestations (Table) 2047
 inflammations 2225
 lymphosarcoma (Figs) 2083
 tumors benign 2032
 malignant 2093
 Medical therapeutics principles 3747
 Medicolegal aspects of fracture 2089
 Medinal dosage (Table) 3837
 Mediterranean anemia See Cooley's anemia
 dengue 480
 fever 314 See also Brucellosis
 Medulla oblongata, function 1288
 Medullary pain center 1476
 reaction pattern 1426
 Megacolon 1871
 Megakaryocytic leukemia, 1105
 Megaloblasts normal count (Table) 1043
 Megalocornes 1563
 Meibomian glands cysts (Table) 1560
 Meibomitis chronic 1613
 Meigs's syndrome 2570
 Melancholia involuntal electric convulsions
 therapy in results 1372
 Melanocarcinoma 2025 (Figs) 3211
 diff diag (Table) 3211 3297
 of genitals diff diag (Table) 3276
 of nails 3454
 pigmentation in diff diag (Table) 3155
 Melanoma malignant 2223
 of vulva 2549
 Melanosarcoma, 3226
 Melanosis bulbi 1563
 Melena, diff diag (Table) 1643
 in Rocky Mountain spotted fever 379
 Meloidosis 327
 Meibomian 314

- Melorheostosis, diff diag (Table) 2798 2878
 Membrane cell in bacteria 137
 Memory definition, 1298
 disturbances definitions 1298
 Men, height weight-age table for 3483
 Menadione dosage 630
 (Table) 1019
 in hemorrhagic disease dosage 1113
 in portal cirrhosis 1971
 Menarche 2179
 Menge pestary (Fig) 2311
 introduction (Fig) 2311
 Ménière's disease, 1486
 allergen in, 553
 dietotherapy in 1486
 potassium therapy in 601 1486
 Meninges anatomy 1289
 hemorrhage 1448 1453
 infections diag (Table) 1462
 manifestations, 1462
 reaction pattern, 1423
 spinal, hemorrhagic lesions 1458
 Meningioma, hyperostosis from (Fig) 1423
 site, 1419
 Meningismus meningitis and, diff diag 215
 Meningitides diff diag (Table) 1432
 encephalomyelo-nonsuppurative, diff diag
 (Table) 442
 Meningitis 1460
 cerebrospinal meningococcal 213
 complicating measles 414
 mumps, 483
 tularemia 823
 diff diag lumbar puncture in, 2129
 (Table) 1462
 epidemiology 210
 fontanelles in diff diag (Table) 2 29
 influenza 286
 streptomycin in, 288
 meningococcal, clinical manifestations 213
 diff diag 214
 quarantine data (Table) 66
 treatment, 217
 ophthalmic manifestations 1883
 otogenic, 2148
 prevention, 217
 pyogenic, torulosus and diff diag 498
 rhinogenic, 2128
 suppurative, 1470
 purulent, hematogenous 1470
 syphilitic, diff diag (Table) 443
 torulosus and, diff diag (Table) 498
 tuberculous 262 1462
 diff diag (Table) 443
 Meningocele, 1409 1411
 cephalhematoma and diff diag 2772
 (Fig) 1408
 Meningococcemia(s) 208
 acute 211
 chronic 211
 diff diag (Table) 174 412
 fulminating 211
 rash in diff diag (Table) 172
 symptoms other than rash in, diff diag
 (Table) 2790
 Meningococcal conjunctivitis 1620
 meningitis cerebrospinal 213
 Meningococcus (Fig) 47
 infections, 208
 antitoxin, evaluation, ■ 215
 Meningococcus infections, clinical manifesta-
 tions 211
 culture in (Table) 211
 cutaneous manifestations (Table) 2246
 diagnosis by smear (Table) 51
 methods, 2 18
 fever in diff diag (Table) 1006
 penicillin in, evaluation, 111
 serologic test in (Table) 60
 skin test in (Table) 60
 streptomycin in 111
 sulfonamides on 90
 Meningo-encephalitis from herpes simplex
 virus, 435
 complicating mumps 483
 Meningovascular syphilis, 1469
 Meniscocytosis 1065
 Menopausal syndrome 2525
 Menopause 2193 2525
 androgen in 2407 2520
 diff diag (Table) 2480
 essential hypertension in (Table) 935
 skin in, 3-40
 stilbestrol in, 2526
 unwanted effects, 2526
 testosterone in, evaluation, 2407
 treatment, 2526
 Menorrhagia, diff diag (Table) 2357
 in myxedema, 1191
 ovarian tumors and 2375
 Menstrual cramps alleviation 2486
 edema, 715
 diff diag (Table) 717
 Menstruation 2483
 amount of blood in, 2484
 disorders androgen in, dosage, 2520
 diff diag (Table) 2618
 progesterone in, 2519
 endometrial phases in (Figs) 2482 2493
 first, 2479
 hematologic changes in, 2485
 hygiene, 2487
 mollusca in, 2495
 premenstrual tension relief of 2486
 retrograde, 2539
 skin in, 3240
 vicarious 2487 2 16
 Mental deficiency 1332
 after asphyxia neonatorum 2763
 diff diag (Table) 1333
 in infancy gut disturbances and (Table)
 2736
 in Huntington's chorea, 1417
 development in infancy 2727
 normal, 1290
 disorders childbirth and, 1285
 classification, 1312
 diagnosis 1314
 etiology 1311
 marriage and, 1288
 pregnancy and 1235
 in Simmonds disease 1172
 surgery and 1286
 reactions abnormal 1292
 Mentality definition, 1292
 Mental antipruritic prescription 3135
 in skin diseases 3131
 Menthyl asheylate in photosensitivity 8121
 Meralgia paresthetica, 3209
 diff diag (Table) 3250 3379

- Merbaphen, 2261
 Mercurhydrin 2269
 Mercupurin, dosage 2262
 Mercurial as diuretics dosage 2261
 uses 3121
 Mercurin dosage 2262
 Mercurochrome 131
 evaluation 3122
 in leprosy 277
 Mercury 127
 administration 130
 as antiseptic 129
 in arsenotherapy 127
 excretion 127
 intramuscular injection technic 3772
 ointment 131
 poisoning 765
 calcification in 10
 (Fig) 9
 chronic 766
 nephritis in, 2373
 ophthalmic manifestations 1596
 oral manifestations 1678
 prognosis 767
 shock in 935
 in syphilotherapy 130
 treatment 760
 preparations 130
 mercuric benzoate 130
 chloride 130
 substitutes 130
 cyanide 131
 iodide 131
 oxide ointment yellow 131
 oxycyanide 131
 salicylate 131
 succinimide 131
 mercurous chloride cathartic action of 129
 iodide dosage 131
 skin eruptions caused by 3340
 therapy in leprothrix dosage 3450
 in lichen planus, 3393
 in pemphigus 3410
 Merthiolate evaluation 129 132 3122
 Merycism definition 1772
 Mesenteric arteries occlusion of 991
 cysts 1923
 embolism electrographic changes in, 808
 (Fig) 842
 lymphadenitis 1887
 in infancy diff diag (Table) 2730
 occlusion 1844
 Metabolic disturbances abdominal pain in
 diff diag (Table) 1748
 rigidity in diff diag (Table) 1746
 Metabolism 581
 American diet 663
 of ammonium compound 614
 basal 635
 decrease in diff diag (Table) 719
 drugs to increase 693
 increase diff diag (Table) 720
 calcium 720
 disturbances 720
 carbohydrate 587
 disturbances, 720
 chloride 593
 disturbances 732
 dietotherapy 658
 disorders of 591
 Metabolism disorders of albuminuria in, diff
 diag (Table) 2371
 anorexia in diff diag (Table) 1779
 arrhythmias 874
 azotemia in diff diag (Table) 2276
 bone swellings in diff diag (Table) 2311
 coma in diff diag (Table) 1994
 convulsions in diff diag (Table) 1519
 cutaneous manifestations 3235 3240
 diarrhea in diff diag (Table) 1840
 double vision in diff diag (Table) 1528
 dyspepsia in diff diag (Table) 1770
 epigastric pain in diff diag (Table) 1738
 exophthalmos in diff diag (Table) 1575
 fever in 24
 gums in diff diag (Table) 1701
 hematemesis in diff diag (Table) 1764
 hepatomegaly in diff diag (Table) 1973
 hiccup in diff diag (Table) 1933
 hoarseness in diff diag (Table) 2160
 hyperalivation in diff diag (Table) 1709
 of infancy list 2758
 insomnia in diff diag (Table) 1803
 integrations for 552
 intestines and 1839
 jaw disturbances in diff diag (Table)
 1705
 joint motility in, diff diag (Table) 2808
 lump in diff diag (Table) 2832
 lip disturbances in diff diag (Table) 1685
 management 691
 oliguria in diff diag (Table) 2232
 ophthalmic manifestations 1598
 (Table) 1691
 ostealgia in diff diag (Table) 2811
 pain in hands and feet in diff diag
 (Table) 2909
 in lower extremities in diff diag
 (Table) 2869
 in upper extremities diff diag
 (Table) 2899
 pathologic fractures in diff diag (Table)
 2846
 photophobia in diff diag (Table) 1574
 polyphagia in diff diag (Table) 1776
 polyuria in diff diag (Table) 2231
 pruritus in diff diag (Table) 3170
 anal in diff diag (Table) 1916
 vulvae in, diff diag (Table) 2591
 psychoses in 1383
 ptosis in diff diag (Table) 1649
 reduction in visual acuity in diff diag
 (Table) 1639
 respiration in diff diag (Table) 2016
 2016
 somnolence in diff diag (Table) 1308
 spasms in diff diag (Table) 2883
 spleen in, 1132
 splenomegaly in diff diag (Table) 1129
 swellings in diff diag (Table) 2827
 tongue in diff diag (Table) 1837
 twitchings in diff diag (Table) 2883
 unconsciousness in diff diag (Table) 1994
 vertigo in diff diag (Table) 2020
 fat, 594
 disturbances 737
 in transition 584
 involuntary nervous system and (Table)
 1396
 iodine, 607

- Metabolism** iron 608
 lipid 594
 disturbances 737
 magnesium 613
 phosphorus 604
 radioactive 605
 phosphates, 613
 disturbances 729
 potassium 591
 disturbances 733
 protein 591
 disturbances 730
 skin function in, 3100
 sodium 597
 disturbances 730
 in starvation 584
 tissue humoral changes in 6
 urea, 594
 disturbances 737
 vitamins 615
 water 585
 in weight loss, 701
Metabolism, 3901
Metacarpals fracture 3034
 (Fig) 3036
 treatment (Table) 3016
Metacarpophalangeal dislocation of thumb
 treatment (Table) 2971
Metagonimus yokogawai 1899
Metal fume fever 24
 poisonings colitis due to 1841
 diagnosis (Table) 756
 manifestations (Table) 756
 occupations susceptible to (Table) 756
 oral manifestations diff diag 1677
 treatment (Table) 756
Metallic tinkle 3540
Metamorphopsia diff diag (Table) 1535
Metamorphosis hyaline definition 7
Metaphen therapeutics 13^o
Metatarsal bones aseptic necrosis of 29^o
 fracture 3032
 treatment (Table) 3039
Metatarsalgia, 3086
 sensory sign (Table) 1493
Meteorism diff diag (Table) 1878
Methenamine (neotropin) dosage 238
Methyl alcohol poisoning clinical manifesta-
 tions (Table) 756
 diagnosis (Table) 766
 occupants susceptible to (Table) 756
 ophthalmic manifestations 1585
 treatment (Table) 756
 sacbylate as counterirritant 312^o
Methylene blue in leprosy 277
 preparation of 49
 in prostatic tuberculosis dosage 243
Methylethyl phenylbarbituric acid in epilepsy
 1517
Methylrosanilin chloride in pinworm infesta-
 tions 3119
Mezloc contraindicated in fracture (Table)
 2984
 in infancy dosage 2744
 pharmacology 3370
 hook in psychotherapy 1330
 therapeutics 3371
Metric equivalents 3803
 system, adopted on of 3803
Mezloc diff diag (Table) 2565
Metycaine 3915
Meulengracht diet 667
Meuse fever 333 See also *Trench fever*
Microbic dissociation 141
Microcephaly 1408
 diff diag (Table) 1333 2729
Microcornea definition, 156^o
Microonychia 3452
Micro-organisms in active acquired immunity
 77
 causing disease 38
 effect of sulfonamide on 81
 in eye 150
 in gastro-intestinal tract 148
 growth of 139
 carbon-dioxide for 140
 oxygen for 140
 in mouth 146
 in nasopharynx 147
 on skin 146
Microphakia, definition 1563
Microphthalmos definition 1562
Micropsia diff diag (Table) 1535
Microscopic examination in diagnosis 45
 darkfield 45
Microsporon audouinii 3302
 diff diag (Table) 487
 furfur cause of tinea versicolor 3300
 lanosum 3302 3304
 microtissimum causative agent in erythrasma,
 3301
Micturition disorders 2-64
 diff diag See *Polyuria Hematuria Pyuria*,
 Dysuria, Frequency of Urination Oliguria
 and *Anuria*
 mechanics 2-33
 nervous control 2-33
Midbrain function 1288
 reaction pattern 1427
Middle ear infection See *Otitis media*
 lobe reaction patterns 1425
Mid palmar space infections 3976
Migraine 1806
 aura in 1307
 prophylaxis 1608
 treatment 1508
Mikulicz cells in rhinoscleroma 2109
 disease 1709
 diff diag (Table) 3517
 (Fig) 1710
 procedure diet after 698
Milium & erythema 3339
 of the ninth day 3339
Milium 3171
 crystallina 3169
 diff diag (Table) 42^o 3360 3368
 rash in diff diag (Table) 3^o 20
 rubra 3171
Miliary fever 437
 tuberculosis 257
Milium 3103
 definition 3104
 diff diag (Table) 3211 3268
 of eye (Table) 1566
Milk acid in infant feeding 2754
 acidophilus 1826
 in acute dermatitis 3122
 in American diet 633
 composition, 634
 (Table) 638

- Milk, condensed in infant feeding 2754
contaminated in typhoid epidemic 227
dried in infant feeding 2754
drip 1752
in peptic ulcer 1793
evaporated in infant feeding 2753
formula in infant feeding 2754
goats in infant feeding 2754
handling 635
hemolytic streptococci in 161
of magnesium 1830
pasteurization in tuberculosis prevention 275
powder 635
in infant feeding 2754
preparation, 635
wet dressings in dermatitis 3333
- Milk teeth 3506
- Müller Abbott tube 1823
- Milroy a disease 1400 3157
- Mineral(s) deposition 9
metabolism 396
in milk 634
oil 1823
in infancy dosage 2745
requirement of adult 661
springs in United States 3763
- Miner's cramps hyponatremia in diff diag (Table) 720
- Minerva jacket (Fig) 3006
- Minor surgery 3909 See also *Surgery minor*
- Miosis congenital definition, 1500
diff diag (Table) 1533
drugs in 3874
- Miotics (Table) 1548
- Mistura nigra, 1767 3810
- Mite as vector (Table) 42
- Mite-borne typhus classification (Table) 267
- Mitochondria 3
- Mitosis 3
- Mitral disease electrocardiographic diagnosis 809
insufficiency blood pressure in (Table) 970
causes (Table) 970
electrocardiogram in (Table) 970
prognosis (Table) 970
signs (Table) 970
- stenosis 950
diff diag (Table) 970
electrocardiogram in (Figs) 801 804 842
948 815 970 3549
prognosis (Table) 974
quintuple in 862
right heart failure from 942
stethogram (Fig) 801
- Mittelschmerz 2533
- Mixed-cell sarcoma (Fig) 575
- Mobius sign in hyperthyroidism 1003
- Moeller's glossitis 1707
- Most heat application of 3790
- Moles 3204
cerebroid 3204
chromium trioxide for 3138
diff diag (Table) 3207 3368
fatty 3205
granular 3205
hairy 3204
(Fig) 3201
in infancy diff diag (Table) 3137
linear 3205
nonpigmented 3204
- Moles nonpigmented (Fig) 3200
pigmented 3204
diff diag (Table) 3155
(Fig) 3200
sebaceous 3205
trichloroacetic acid in 3131
- Moleskin adhesive plaster for traction 2097
- Molluscum bodies 3788
- contagiosum 3187
diff diag (Table) 175 422 3211 3263
(Fig) 430
generalized (Fig) 3280
ophthalmic manifestations 1566
of penis (Fig) 3283
rash in diff diag (Table) 3200
- Monarthralgia diff diag (Table) 2603
- Mongolian idiocy 1163
decreased growth in diff diag (Table) 2762
diff diag (Table) 2720 2774
(Fig) 1166
ophthalmic manifestations 1583
pigmentation in diff diag (Table) 3185
spot 3205
- Monilethrix 3410
diff diag (Table) 3420
- Monilia albicans 3301
(Fig) 497
in thrush 1697
- Moniliasis 502
of axilla diff diag (Table) 3259
cutaneous manifestations 3301
in diabetic (Fig) 3294
diff diag (Table) 487 3275 3297
of nails 3453
(Fig) 3453
- pulmonary 503
(Fig) 503
- aerologic test in (Table) 60
- treatment, 504
acridavine in 3115
- Monocytes 3704
cytology 1040
- Monocytosis diff diag (Table) 999
- Mononeuropathies 1480
peripheral 1489
- Mononucleosis infectious 466
bone marrow count in (Table) 1013
diagnosis by smear in (Table) 50
diff diag (Table) 175 180 412
(Fig) 409
lymphadenopathy in diff diag (Table) 1136
lymphocytosis in diff diag (Table) 1098
oral manifestations 1677
Paul Bunnell agglutination test in 463
rash in diff diag (Table) 175
symptoms other than rash in diff diag (Table) 3791
- Monosaccharides 288
- Monosporium apiospermum 3314
- Monteggia fracture 3097
- Moon face, diff diag (Table) 3300
- Moranyl in pemphigus dosage 3403
- Morax Axenfeld conjunctivitis 1622
- Morbilli 403
- Morbus caeruleus heart in 362
- maculomus veribosi 1114
- Morgagnian cataract 1694
- Morosity 1332

- Morphea**, 3429
 diff diag (Table) 3404
Morphine addiction 3861
 treatment 3862
 withdrawal symptoms 3862
 contraindications 3859
 demerol and, comparison 3865
 dosage pre-anesthetic 3913
 in fibrinous pericarditis 1009
 idiosyncrasy 3858 3860
 in infancy dosage 2743
 poisoning acute, 3860
 treatment, 3860
 ophthalmic manifestations 1586
 reactions, 3859
 solution, dosage (Table) 3854
 substitutes 3854
Morton's metatarsalgia, 3086
 toe, 3086
Morvan's disease See *Syringomyelia*
Mosquito anopheles in malaria 509
 bites 3191
 malaria prevention and 521
 vectors of filariasis 5321
 (Table) 42
Moss irish in diet 1896
Mother-offspring relationship immunity in "6
Motility meal, 3721
 test, 3729
Motion passive 3756
 range of 2307
Motor behavior 1308
 disturbances definition 1308
 disturbances in spinal cord tumors 1433
 pathway 1474
 signs in peripheral nerve injuries (Table)
 1490
 in plexus injuries (Table) 1498
 trigeminal irritation, 1483
 paralysis 1484
Mouth bacteria 146
 care in infectious diseases 71
 in tuberculosis 270
 cosmetics chemistry 3141
 enanthems in diff diag (Table) 1668
 examination 3505
 hygiene 1653
 in infancy examination, 2731
 neoplasms See *Oropharynx neoplasms*
 in newborn, care 2749
 smears in infancy indications 2739
 wash 1660
M type of bacterial growth 141
Mucilages 3820 3821
Mucin gastric dosage 1756
Mucocele in chronic paranasal sinusitis 2135
Mucoid bacterial growth 141
Mucosa gastric ectopic, 1865
 pancreatic ectop c 1865
Mucous patches in syphilis 2283
Mud bath (Table) 3791
Muffins soy bean recipe for 676
Multiple benign cystic epitheliomas diff diag
 (Table) 3268
 hemorrhagic famulal telangiectases diff
 diag (Table) 3268
 myeloma 1126
 bone marrow count in (Table) 1043
 lymphadenopathy in diff diag (Table)
 1136
Multivitamin preparations 631
Mumps, 480
 complications 482
 convalescent serum 483
 in prevention of oophoritis 2612
 of orchitis 2465
 diff diag., 483
 immune serum evaluation 22
 immunity after 76
 oophoritis 2612
 oral manifestations 1670
 orchitis 2465
 prevention, 483
 quarantine data on (Table) 65
 serologic test in (Table) 60
 treatment, 484
Munro abscesses 3414
Murine typhus 375
Murmurs cardiac 5549
 classification (Table) 973
 diff diag 972
 (Table) 970
 functional in damaged heart 972
 in mitral stenosis (Fig) 801
Murray-Jones spirot (Fig) 3001
Muscae volitantes (Table) 1592
Muscles of abdominal wall 3553
 (Fig) 3553
 action of quinine on 518
 activity arteriosclerosis and 978
 leukocytosis in diff diag (Table) 1097
 atrophies diff diag (Table) 2882
 in peripheral vascular disease (Table) 996
 progressive 2884
 ptosis in diff diag (Table) 1649
 of body (Fig) 3575
 contusion of 2267
 disturbances 2830
 diff diag (Table) 2882
 drugs acting on 3887
 lut 3888
 dystrophies 2880
 diff diag 2887
 pseudohypertrophic, 2880
 (Fig) 2885
 of eye See *Eye muscles of*
 fatigue physiology 2888
 pain diff diag (Table) 892
 rupture 2937
 smooth depressants 3892
 stimulants 3890
 spasm drugs used in 3874
 stimulants, in urinary retention 2262
 strated drugs acting on, 3888
 supraspinatus rupture 2933
 transplantation 2812
Muscularis mucosa, 1741
Mu broom poisoning diff diag (Table) 240
Mustard bath 3133
 as counterirritant 3122
 foot bath 3122
 in common cold 395
 gas action, 750
 poisoning treatment, 51
 plaster as rubefacient 3122
 poultice as rubefacient 3123
Mutum, definition, 1310
Myalgia, epidemic, 403
Myasthenia gravis 2882
 diff diag (Table) 2887

- Myasthenia gravis* gravitation shock in 825
 neostigmine in 2886
Mycelium definition 485
Mycetoma 3315
Mycol acteria causing disease 38
 effect of sulfonamides on 92
 infection with 252
 tuberculous bacteriology 2,2
 chemistry 252
 cultivation 282
 dissociation 252
 (Fig.) 29
 penicillin in 111
 streptomycin in 111
Mycoderma identification 487
Mycoses 485 489
 culture in (Table) 54
 d embles 3386
 diagnosis by smear in (Table) 51
 fungoides 3386
 (Fig.) 338
 of nasopharynx 2138
 pulmonary, diff diag (Table) 405
 systemic 489
 diff diag (Table) 103
 skeletal disorders in diff diag (Table)
 2034
 throat in diff diag (Table) 3601
 vaginias 2598
 vulvitis 2593
Mydriasis cholinergic drugs in 3876
 congenital 1500
 diff diag (Table) 1533
Mydriatics (Table) 1548
Myelitis transverse 1457
Myeloblasts normal count (Table) 1043
Myelocytes normal count (Table) 1043
Myelogenous leukemia acute bone marrow
 count in (Table) 1043
Myeloma diff diag (Table) 2838
 endothelial 2845
 (Fig.) 2845
 osteomyelitis and diff diag 2936
 multiple 1126 2847
 of bone predisposing to fracture 2982
 bone marrow count in (Table) 1043
 differentiation from hyperparathyroidism
 1230
 hyperproteinemia in diff diag (Table) 735
 hyperuricemia in diff diag (Table) 787
 lymphadenopathy in diff diag (Table)
 1136
 pain in diff diag (Table) 2941
 renal complications in 2838
Myelomeningocele 1411
Myelopathies 1501
 diff diag (Table) 1433
Myelophthisic anemia 1091
Myiasis dermal creeping 3193
Myocardial anoxia, treatment 987
 damage electrocardiogram in (Fig.) 827 828
 831 832 837
 electrocardiographic diagnosis 810
 fibrosis 903
 infarction 992
 acute electrocardiogram in 814 815 816
 in backward failure 945
 fever in diff diag (Table) 1007
 pericarditis in 1007
 symptoms 1009
Myocardial ischemia 890
Myocarditis 1013
 diphtheritic 308 1013
 Fiedler's 1013
 parasitic 1015
 rheumatic 1014
 syphilitic 1015
 with trichinosis, electrocardiogram in 834
 tuberculous 1015
 use of sugars in 591
Myocardiorrhaphy indications for 3995
Myocardium anatomy 3547
Myofascitis 2894
Myogelosis 2894
Myoglobinuria 1076
 diff diag (Table) 1074
Myoma of skin 3207
 uterine 2554
 (Fig.) 2554
Myomectomy 2557
Myopathy primary 2880
Myopia 1336
 (Fig.) 1336
Myosarcoma of stomach, 1810
Myositis 2894
 ostifans progressive generalisata, diff diag
 (Table) 2579
 traumatic 2960
Myotomy 2812
Myotonia atrophica 2898
 diff diag (Table) 2887
 congenita, 2880
 diff diag (Table) 2887
Myringitis acute 2143
 diff diag (Table) 2608
 discharge in diff diag (Table) 2150
 (Fig.) 2144
 bullous 2144
 differentiation from otitis media 2144
Myringomycosis 3305
Myringoscopy in infancy indications for 273
Myringotomy 2037
 indications for 3993
 in otitis media 2148
Myrrh as astringent 3123
Myxedema 1193
 anemia in 1030
 diff diag 1196
 edema in 716
 (Fig.) 1194
 joint motility in diff diag (Table) 2511
 juvenile 1193
 myocardial dilatation in (Table) 955
 surgical 1193
 treatment 1197
NABOTHIAN cysts of cervix 2550
 (Fig.) 2550
Nails anaerobiasis 3155
 anatomy 3301
 bleach chemistry 3152
 brittle 3458
 changes in cutaneous diseases 3155
 discoloration 2455
 diseases of 3151
 treatment, 3158
 dystrophies 3156
 following pneumonia (Fig.) 3152
 growth of 3151

- Nails infections 3454
 ingrown, 3453
 monilia 3455
 polish chemistry 3447
 powder chemistry 3449
 remover chemistry 344
 psoriasis, 3417
 (Fig) 3453
 ringworm of (Fig) 3494
 splinter hemorrhage of in endocarditis 1093
 splitting of (Fig) 3459
 syphilitic lesions of 3455
 transverse lines of 3457
 tuberculosis 3454
 tumors 3454
 verruca vulgaris 3455
 Naphthoate in malaria 319
 Napkin dermatitis 3163
 (Fig) 3160
 secondary syphilis vs. 3164
 Narcolepsy definition, 1307
 Narcotics 3936
 Federal regulations 3816
 Nares atresia (Fig) 2014
 Nasal See also Nose
 accessory sinuses malignant growth 1068
 osteomas 2067
 tumors 2067
 catheter technique in oxygen administration 397
 diphtheria 307 See also *Diphtheria*
 fossa diagram (Fig) 2022
 frontal section (Fig) 2023
 furunculosis 2109
 instillation, 2077
 in diabetes in ipidus 1183
 preparations for 2027
 irrigation technique, 2077
 obstruction in adenoiditis 2159
 caused by nasal cancer 2068
 in chronic paranasal sinusitis 2133
 diff diag (Table) 2732
 in infancy 2732
 septum abscess 2112
 diff diag (Table) 3590
 deviation manifestations (Table) 2016
 perforation, manifestations (Table) 2046
 ulcer 2114
 diff diag (Table) 3590
 sinuses anatomy 3593
 (Fig) 2113 3594
 irrigation technique 2073
 surgery 2038
 spray 207
 vestibule fissure 2112
 Nasolacrimal duct patency examination 3623
 Nasopharyngitis acute 2136
 atrophic 2138
 chronic 2139
 hypertrophic 134
 Nasopharynx fact in of 147
 diphtheria 306 See also *Diphtheria*
 examination 3593
 fibroma 2068
 mycoses 2138
 Schminck tumor of 2068
 suppuration 2140
 National Formulary 300
 Natural immunity 73
 Nauheim baths (Table) 3791
 Nausea in azotemia 2278
 diff diag (Table) 1770
 from digitalis 857
 postoperative 4003
 prevention 4005
 Navy method of venereal prophylaxis 319
 Necator americanus ova (Fig) 1894
 in stool (Fig) 3731
 Nebulizer in bronchial asthma 2023
 technic 2118
 Neck abnormalities of diff diag (Table) 3511
 anatomy 3510
 anterior aspect (Fig) 3510
 broken transportation in (Fig) 2968
 cysts (Table) 2013
 dermatoses of diff diag (Table) 3254
 dislocation 2968
 (Fig) 3006
 traction in (Fig) 3007
 fascias of 319
 fracture 3005
 treatment (Table) 3001
 glands, 1186
 in infancy examination 731
 infection in routes of spread 3310
 pain, diff diag (Table) 3590
 preparations 3139
 stiffness diff diag (Table) 3520
 triangles of 3510
 tumors diff diag (Table) 3514
 vascular disturbances diff diag (Table) 3516
 Necrobiosis lipoidica diabetorum diff diag (Table) 311 33 9
 (Fig) 341
 pigmentation in diff diag (Table) 3155
 Necrosis aseptic 2501
 femur complicating hip dislocation 2079
 fat pancreatic 1339
 pulmonary 2195
 Necropsy 408
 Needling in bullets (Fig) 2901
 Negativism 1309
 Neisseria catarrhali properties (Table) 208
 causing disease 33
 flavescens properties (Table) 208
 gonorrheae properties (Table) 203
 infections 203
 meningitides properties (Table) 208
 pharyngoseptica properties (Table) 208
 properties (Table) 203
 Nematode life cycle 3321
 Nembutal dosage (Table) 3837
 in infancy dosage 274
 Neosarphenamine absorption 120
 administration 117
 in anthrax 293
 chemical structure 117
 distribution, 120
 dosage 117
 efficacy (Table) 124
 excretion 120
 N-cinchophen evaluation 3333
 Neologisms definition 108
 Neonatal dosage (Table) 3837
 Neonatal period death rate in 275
 special examinations in 2735
 syphilis 287
 diff diag (Table) 729
 prevention 2791

- Neonatal tetany 1232
 Neoplasms 569 See also *Tumors*
 malignant 572 See also *Carcinoma*
 Neoplastic disease diff diag (Table) 405
 fever 25
 Neo-silval dosage 1135
 Neostam in leishmaniasis 535 3319
 Neostibosan in leishmaniasis 535
 Neostigmine in delayed menstruation dosage 2511
 dosage (Table) 3374
 in infancy dosage 2745
 in myasthenia gravis dosage 2886
 in paralytic ileus dosage 1851
 in poliomyelitis 464
 therapeutics (Table) 3874
 Neosynephrine 3882
 in complete heart block 880
 in coronary occlusion dosage 938
 dosage 3877
 in infancy dosage 2745
 in shock prevention, 938
 as va oconstrictor dosage 2029
 Nephrectomy in carcinoma of kidney 2320
 indications for 3004
 in renal tuberculosis 2351
 Nephritis See also *Glomerulonephritis* *Pyelitis*
 acute edema in 714
 diff diag (Table) 717
 (Fig) 2374
 arteriosclerotic (Fig) 903
 chronic differentiation from myxedema 1136
 treatment (Table) 2388
 with edema hypocalcemia in, diff diag (Table) 724
 focal interstitial 2508
 diff diag (Table) 2361
 hemorrhages in (Fig) 2367
 parenchymatous diff diag (Table) 2364
 post scarlatinal 170
 of pregnancy 2638
 suppurative diffuse pathology 2359
 surgery and 4000
 tubular 2373
 diff diag (Table) 2365
 Nephrolithiasis 2311
 Nephrolithotomy indications for 3003
 Nephropathies 2362
 arteriosclerosis and 994
 azotemia in diff diag (Table) 2276
 in backward failure 944
 chronic circulatory disturbances in (Table) 955
 diff diag (Table) 2264
 positive Benedict test in diff diag (Table) 3677
 Nephropexy in intermittent hydronephrosis 2296
 Nephropoies 2295
 (Fig) 2295
 Nephrosclerosis diffuse 2 68
 Nephrosis basal metabolism in diff diag (Table) 719
 blood cholesterol in diff diag (Table) 736
 blood fat in diff diag (Table) 739
 diabetic edema in 708
 edema, diff diag (Table) 717
 electrocardiogram in (Fig) 834
 hypocalcemia in diff diag (Table) 724
 lipid, 2380
 Nephrosis lipid diff diag (Table) 2365
 pericardial effusion with electrocardiographic changes 808
 pneumococcal peritonitis in 1929
 tubular 2372
 diff diag (Table) 2365
 Nephrotic crises 2392
 syndrome in renal amyloidosis 2503
 Nerve(s) accelerator function 779
 augmentor function 779
 block anesthesia 3019
 (Fig) 9918
 paravertebral technic 833
 cranial 1471
 anatomy 1471
 complications 1452
 physiology 1472
 deafness 1485
 disorders predisposing to fracture 2952
 facial supranuclear paralysis of 1485
 fibers autonomic distribution (Table) 1479
 medullated (Fig) 1503
 glossopharyngeal neuritis 1498
 paralysis 1488
 of head (Fig) 1481
 hypoglossal neuritis 1489
 impulses mechanism of 4
 injuries in elbow fracture 3025
 in shoulder dislocation 2972
 intermedius neuritis 1485
 laryngeal recurrent paralysis of 1488
 olfactory neuritis 1490
 optic anatomy 3617
 neuritis 1480
 peripheral cutaneous fields of (Fig) 1494
 1495 1496 1497
 injuries 1458
 reaction patterns in (Table) 1478
 (Table) 1490
 organic disturbances of 3228
 phrenic avulsion 2030
 injuries motor signs in (Table) 1490
 recurrent anatomy 2091
 paralysis 2091
 root block in thrombo-angitis obliterans 1031
 segmental (Figs) 1472 1473
 spinal anatomy 1472
 accessory paralysis 1489
 tissue degeneration, pigmentation in 9
 Nervous system 4
 central effect of ammonia on 614
 fluid balance and 704
 in shock 931
 stimulants 3903
 contrast roentgenography in (Table) 3742
 depression of barbiturates in (Table) 3841
 effect of sulfonamides on, 94
 examination 3389
 routine (Table) 3334
 involuntary 4 1388
 adrenergic division, 1391 3672
 drugs 3376
 allergy and 1392
 anatomy 1388
 associations 1287
 cells 1388
 cholinergic division 1391 3672
 anatomy 1389
 depressants 1394, 3375

- Nervous system involuntary in clinical disturbances 1395
 (Table) 1396
 craniosacral 4, 1389 1391
 efficiency 1287
 emotions and 1391
 hormones and 1392
 metabolism and 1392
 neoplasms 1401
 nomenclature 1390
 parasympathetic See *Nervous system involuntary cholinergic*
 pharmacology 1391 3372
 physiology 1390
 scheme (Fig) 3373
 surgery indications for 1391
 procedure 1394
 sympathetic See *Nervous system involuntary adrenergic*
 syphilis of tryptamine in 120
 vagal, 4
 voluntary 4 1402
 abnormalities congenital 1407
 circulatory disturbances 1436
 components 1289
 diagnosis in 1402
 drugs for 3332
 infections 1460
 mechanical disturbances 1450
 neoplasms 1419
 operative procedures in 1406
 therapy in, 1405
 trauma to 1450
- Neufeld reaction in influenza 287
 typing of pneumococci, 201 2176
- Neural leprosy 274
- Neuralgia diff diag (Table) 2132
 facial in cerebral aneurysm 1443
 glossopharyngeal 1488
 intercostal, abdominal pain in left upper quadrant diff diag (Table) 1912
 pain in right upper quadrant in diff diag (Table) 1959
 sensory 5 ns (Table) 1491
 paravertebral nerve block for 853
 plantar sensory sign (Table) 1493
 post herpetic, 436
 sphenopalatine Sluder 1482
 trifacial 1492
 trigeminal 1482
 in congestive neuralgia 1681
 photophobia in 1482
- Neuralgic pain ammonium sulfate in 2890
- Neurasthenia, 13.0
 drug therapy in, 1352
 thiamine deficiency vs 622
- Neurectomy indications for 3994
- Neuritic atrophy of skin 3228
- Neuritis abducens 1647
 brachial 2953
 cochlear 1485
 in diphtheria 308
 of hypoglossal nerve 1489
 oculomotor 1645
 olfactory 1480
 optic 1640 1641
 tiology 1641
 (Fig) 1640
 ophthalmoscopy in 1643
 peripheral (Fig) 618
- Neuritis pregnancy and 2317
 of spinal accessory nerve 1489
 trigeminal 1481
 trochlear 1647
 vestibular 1486
 Wrisberg 1485
- Neuroblastomas adrenal 1265
- Neurocirculatory asthenia 897
 electrocardiographic changes in (Fig) 808
 813
 gravitation shock in 925
 disturbances shock due to 931
 pain diff diag (Table) 892
- Neurodermatitis allergen in 553
 atopic (Fig) 550
 (Fig) 3331 3914
 diff diag (Table) 3214 3254 3379 3382
 disseminated 3313
 diff diag (Table) 3267
 in infancy diff diag (Table) 3147
 localized 3229
- Neurofibromatosis multiple 1413 3906
 (Fig) 3901
 pigmentation in diff diag (Table) 3155
- Neurogenic bladder 2331
 dermatoses 3227
 disturbances 14 1471
 abdominal rigidity in diff diag (Table) 1746
 atrophy in diff diag (Table) 2892
 breast in diff diag (Table) 2578
 coma in diff diag (Table) 1291
 constipation in diff diag (Table) 1853
 convulsions in diff diag (Table) 1519
 cough in diff diag (Table) 2050
 diminution of hearing in diff diag (Table) 2019
 double vision in diff diag (Table) 1528
 dyspepsia in, diff diag (Table) 1770
 epigastric pain in diff diag (Table) 1788
 fibrillations diff diag (Table) 2883
 hiccup in diff diag (Table) 1933
 hoarseness in diff diag (Table) 2160
 hyperacusis in diff diag (Table) 2096
 hypersalivation in, diff diag (Table) 1708
 impotence in, diff diag (Table) 2409
 incontinence of feces in diff diag (Table) 1915
 of infancy list 2759
 insomnia in diff diag (Table) 1805
 intimal 1844
 involuntary nervous system and (Table) 1397
 involving intestines 1844
 limp in diff diag (Table) 2832
 lip disturbances in diff diag (Table) 1685
 low back pain in diff diag (Table) 3072
 of male reproductive system 2438
 organic reduction in visual acuity in diff diag (Table) 1639
 pain in chest in, diff diag (Table) 2080
 in left lower quadrant diff diag (Table) 1866
 in lower extremities in diff diag (Table) 2968
 in right lower quadrant diff diag (Table) 1881
 on swallowing in diff diag (Table) 1723
 in upper extremities in, diff diag (Table) 2828

- Neurogenic disturbances papilledema in diff diag (Table) 1579
 pathologic fractures in diff diag (Table) 2316
 peripheral 1471
 ptosis in diff diag (Table) 1649
 respiration in diff diag (Table) 2014
 2016
 of respiratory tract 2020
 somnolence in diff diag (Table) 1508
 sore throat in diff diag (Table) 2071
 spasms in diff diag (Table) 2332
 stomach in 1767
 swellings of lower extremities in diff diag (Table) 2376
 tearing in diff diag (Table) 1323
 tinnitus in diff diag (Table) 2141
 tongue in diff diag (Table) 1687
 tremors in diff diag (Table) 2081
 unconsciousness in diff diag (Table) 1991
 of urinary system 2330
 vertigo in diff diag (Table) 2070
 fever 23
- Neurologic complications of antituberc treatment 410
 disorders classification 1302
 ophthalmic manifestations 1581
 examination 1402
 in syphilis 839
 infection 1460
 localization 1460
 therapy 1460
- Neurologist indications for consultation 3035
 Neurology descriptive 1471
- Neuroma 3207
 acoustic 1490
- Neuromuscular disorders insomnia in diff diag (Table) 1800
 ophthalmic manifestations 1581
- Neuropathies See *Neurogenic disturbances*
- Neurography 3005
 indications for 3000
- Neuroses 1335
 allergens in 553
 anxiety 1347
 in hypertension 905
 cardiac 897
 compensation 1337
 compulsion 1307
 conversion 1303
 definition 1313
 differentiation from psychosis (Table) 1515
 etiology 1336
 gastric 1767
 diff diag 1786
 (Table) 1787
 differentiation from intestinal 1845
 functional 1772
 hypersthenic 1773 1777
 treatment 1775
 insomnia in diff diag (Table) 1300
 intestinal 1845 See also *Intestinal neu a c*
 latent 1315
 mixed 1359
 perversion 1337
 psychoanalytic concept, 1337
 resolution 1315
 somnolence in diff diag (Table) 1309
 symptoms 1310
 terminology Freud's 1310
- Neuroses traumatic 1356
 useful 1346
 varieties 1346
- Neurosurgery fibrin film in 80
 indications (Table) 1324
 procedures (Table) 1324
- Neurotyphus 1464
- Neurotic excoriations 3031
 diff diag (Table) 3379
 (Fig) 3232
- Neurotropic virus 389
- Neutralizing bodies in diagnostic tests 61
 (Table) 52
- Neutrocytosis See *Leukocytes*
- Neutropenia malignant 1026
- Neutrophilia See *Leukocytes*
- Neutrophils 3700
 schematic outline (Fig) 3703
- Nevus 3701
 anemic 3703
 arsenic 3703
 blue 3705
 capillary (Fig) 3700
 flammeus 3702
 in infancy diff diag (Table) 3147
 hypomatodes 3205
 pigmentation in diff diag (Table) 3155
 pigmentosus 3201
 pilosus 3204
 sebaceous 3705
 spider 3703
 vascular 3700
- Nevocarcinoma See *Melanocarcinoma*
- New and Nonofficial Remedies 3800
- Newborn infant anemia of signs 1059
 artificial feeding of 2751
 breast feeding of 2749
 clothing 2749
 convulsions in diff diag (Table) 2780
 cryptogenic fevers of diff diag (Table) 2760
 dermatoses of diff diag (Table) 3146
 diseases of 2758
 epidemic diarrhea of 2786
 examination 2726
 fat necrosis of 3151
 gastro-intestinal flora in, 148
 genital stimulation of 2778
 hemorrhagic disease of 1111
 history 276
 hygiene of 2747
 hypoglycemia of 2779
 impetigo of epidemiology 150
 infections of 2785
 jaundice of diff diag (Table) 2701
 lactation of 2778
 mastitis of 2778
 mouth hygiene in 1658
 peritonitis in 1932
 pneumonia in 2771
 pneumothorax in 2771
 sclerema of 3157
 sepsis of 2780
 tarry stools in, diff diag (Table) 1815
 tetany of 2778
 treatment method. 2740
 vaginal discharge in 278
- Niacin 625
 deficiency 625
 cutaneous manifestations 3238

- Anacin deficiency glossitis due to (Fig) 3 37
 oral manifestations 1676
 pellagrous dermatitis (Figs) 3 37
 therapeutics 626 33 5
 Nickel poisoning clinical manifestations
 (Table) 756
 diagnosis (Table) 756
 occupations susceptible to (Table) 756
 treatment (Table) 756
 Nicola operation in recurrent dislocation of
 shoulder 2974
 Nicolas Favre disease 471
 Nicotinamide in erythema multiforme 3377
 Nicotine 3883
 pharmacology 3883
 poisoning 3884
 circulatory disturbances in (Table) 935
 in tuberculosis 260
 Nicotinic acid 625 See also *Niacin*
 Niemann Pick's disease 1134
 diff diag (Table) 1333
 ophthalmic manifestations in 1599
 Night blindness diff diag (Table) 1532
 Nikethamide 3871
 in infancy dosage 2714
 Nikolsky sign, in pemphigus 3107
 Nine mile fever 382
 Nipples disturbances diff diag (Table) 2578
 Paget's disease of 2581 (Fig) 2580
 syphilis 2618
 tumors of benign 2579
 Nirvanol evaluation (Table) 3837
 Nitric acid as cauterant 31 3
 for moles and warts 3158
 Nitrites 389
 in angina pectoris 3893
 in coronary occlusion 989
 effect on smooth muscle 3888
 in hypertension 912 3835
 in peripheral vascular disease 908
 pharmacology 3893
 preparations 3892
 prescription 3894
 rates of action (Table) 3894
 therapeutics 3893
 toxicology 3895
 Nitritoid crisis speed shock and 924
 Nitrobenzol poisoning clinical manifestations
 (Table) 757
 diagnosis (Table) 757
 occupations susceptible to (Table) 757
 treatment (Table) 757
 Nitrocantharidin 1048
 in Hodgkin's disease 1140
 attention in renal insufficiency 80
 Nitroglycerin 3893
 Nitrous oxide and its advantages 4003
 disadvantages 4003
 Nocardiosis 489 See also *Actinomycosis*
 Nocturia See *Poluria*
 Nocturnal hemoglobinemia diff diag (Table)
 1074
 paroxysmal hemoglobinuria, 1075
 Nodal beat premature electrocardiographic
 diagnosis 810
 rhythm electrocardiographic diagnosis 810
 Nodule definition 3104
 dermatosis characterized by diff diag
 (Table) 3 10
 Nodulo-ulcerative pyoderma 3 86
 Noma, 1697
 Nonofficial Drugs 3800
 Nontropical sprue 1034
 Nonunion in fractures 2988
 Normal personality 1091
 Normergy 3329
 Normoblasts normal count (Table) 1043
 North African relapsing fever 357
 American relapsing fever 357
 Nose See also *Nasal* and *Rhinogenic*
 abnormalities internal, diff diag (Table)
 3590
 anatomy 3388
 anomalies congenital manifestations
 (Table) 913
 treatment (Table) 913
 cyst 2006
 deformity (Table) 913
 operative correction (Fig) 913
 dermatoses diff diag (Table) 2110
 discharge from diff diag (Table) 2100
 epithelioma 9110
 examination 930
 (Fig) 3598
 foreign bodies in manifestations (Table)
 2046
 fractures 3015
 (Fig) 3013
 treatment (Table) 3004
 in infancy examination, 31
 malignant lesions of 967
 nerves of 3589
 pain in, diff diag (Table) 2067 213
 papilloma 2066
 rhinoscopy anterior (Fig) 3592
 posterior 2091
 sagittal section (Fig) 2091
 surgery 2038
 Nosebleed diff diag (Table) 21 3
 recurrent in chronic glomerulonephritis 2383
 treatment symptomatic 2124
 Nosepicker's ulcer 2114
 Nostal dosage (Table) 3837
 Nostrils 3801
 Novatropine dosage (Table) 3875
 in infancy dosage 9743
 Nucleic acid derivatives in agranulocytosis
 1029
 Nucleoproteins bacterial 133
 cell 3
 Nucleus bacterial 138
 cell 3
 pulposus prolapse of 3074
 Nupercaine 3915
 Nursery for newborn infants 2747
 Nursing care in infectious diseases 63
 of newborn infants hygiene 2751
 schedules of newborn infant 2751
 staff for newborn service 2748
 Nutmeg liver 19 7
 Nutrition See also *Dietotherapy*
 edema, 708
 pharmacopoeia of 633
 in prematurity 2766
 yardstick (Table) 659
 Nutritional deficiencies oral manifestations
 diff diag 1674
 Nuts composition (Table) 651
 food value 650
 Nuxvomina See *Strychnine*

- Nyctalopia diff diag (Table) 1535
 in vitamin A deficiency 619
 Nycturia See *Polyuria*
 Nyraphomania definition 1303
 diff diag (Table) 2491
 Nystagmus diff diag (Table) 1534
 examination for 3024
- O**
 OBER test 2897
 Obesity See also *Weight gain*.
 buffalo 1162
 (Fig) 1161
 diabetes and 1261
 diet in 697
 diff diag (Table) 695
 diuretics in 698
 electrocardiographic changes in 808
 exercise in 697
 in Fröhlich's syndrome 1167
 hyperalimentary 696
 hypertension and 901
 (Table) 903
 insulin production and 5891
 massage in 699
 plumpness vs 696
 in pregnancy 696
 psychotherapy in 697
 salt restriction in 697
 surgery and 8908
 treatment, 696
 water restriction in 697
 Obligatory aerobes 140
 Obsessive thinking definition 1298
 Obstetrical bag contents 2677
 paralysis 2951
 (Fig) 2952
 table, 2634
 Obstetrician, indication for consultation 2655
 Obstetrics 2617
 anesthesia in 2678
 in cardiac invalid 864
 caudal anesthesia in 2680 See also *Caudal anesthesia*
 delivery (Figs) 2700-2712
 home versus hospital 2678
 normal delivery in 2696
 surgery in 2693
 Obstipation See *Constipation*
 Obstruction biliary 2006
 intestinal 1873
 (Fig) 1874
 pyloric, 1789
 urinary 2264
 Obstructive emphysema complicating pertussis 282
 phenomena 16
 resection of colon 1836
 Occlusion coronary See *Coronary occlusion*
 of hepatic artery 1960
 mesenteric 994 1844
 of portal vein 1960
 Occupation(s) arteriosclerosis and 978
 for cardiac invalids 865
 Occupational dermatitis 551 3330
 hazards 744 4060
 keratoses 3215
 leukoderma diff diag (Table) 3404
 therapy 3760
 in rheumatoid arthritis 2220
 Occupational therapy in tuberculosis 271
 Ochronosis diff diag (Table) 3243
 skin in 3241
 Octofolin dosage (Table) 2315
 Ocular See also *Ophthalmic* and *Eye*
 changes in diabetes mellitus 1219
 deviations, 1599
 dyspepsia in, diff diag (Table) 1771
 dominance tests for 1543
 hypotension 1583
 motility See *Eye movements of*
 Oculoglandular tularemia 829
 Oculomotor neuritis 1615
 paralysis 1514
 Oculovagal syncope 923
 Odontalgia diff diag (Table) 1680 2182
 Odor of breath diff diag (Table) 1660
 Oedipus complex 1339
 Office 4035
 drugs for list 3749
 equipment, essential list 3748
 laboratory apparatus for list 3667
 equipment, 3660
 solutions for list, 3663
 tests chemicals for 3661
 personnel, 4048
 practice establishing 4035
 units 4042
 Official drugs 3799
 Oguchi's diseases 1564
 Oidia, definition 485
 Oidium albicans thrush due to 2158
 Oil aspiration lipid pneumonia due to 2048
 of cede in dermatitis 3335
 ointment in alopecia areata, prescription, 3448
 castor 1829
 chaulmoogra, in leprosy 277
 of chenopodium 1896
 of cinnamon as aromatic 3123
 of cloves in carious tooth 3129
 croton 1829
 of eucalyptus as expectorant 3123
 in rhanitis 3116
 of theobroma uses 3123
 of turpentine uses 3123
 uses 3136
 vegetable food value 350
 volatile 1536
 uses 3131
 of wintergreen as counterirritant 3122
 Only rebirth 3430
 Ointments 3136
 antipruritic prescription 3136
 in folliculitis decalvans 3442
 in gynecology (Table) 2501
 keratolytic, prescriptions 3137
 penicillin 3124
 in premature alopecia, 3445
 in seborrhea, prescriptions 3431
 sulfonamide 99 3128
 Whitfield's as keratolytic 3136
 Olecranon bursitis 2903
 diff diag (Table) 2935
 (Fig) 2902
 fracture 3024
 treatment (Table) 3014
 Oleomargarine as butter substitute 630
 Oleothorax, 2036
 in tuberculous pneumonia 2208

- Olfactory neuritis, 1450
 Oligemas, definition, 10
 Oligohydramnion, 2670
 Oligomenorrhea, diff diag (Table) 2618
 Oligopnea, diff diag (Table) 2014
 Oligospermia, 2108
 Oliguria in backward failure 944
 diff diag (Table) 2232
 in mercury poisoning 766
 Omentopexy 1972
 in congestive splenomegaly 1131
 Omentum, tors on of 1934
 Omphalitis, 2785
 of newborn diff diag (Table) 2762
 pain in, diff diag (Table) 1897
 phlegmonous 2786
 Onchocerca, 3321
 volvulus, life cycle (Fig) 3326
 Onchocerciasis, 3326
 fly as vector in (Table) 42
 Onychatrophia, 3457
 Onychauxis, 3456
 Onychogryphosis, 3456
 Onycholysis 3457
 Onychomadenia 3457
 Onychomycosis, 3304 3455
 (Fig) 3204 3453
 Onychophagia, 3457
 Onychorrhexis 3457
 Oogenesis 2487
 (Fig) 2488
 Oophorectomy in breast cancer 2582
 indications for 3994
 Oophoritis complicating mumps 483 2612
 pain in, left lower quadrant, diff diag
 (Table) 1866
 right lower quadrant, diff diag (Table)
 1880
 Oospore definition 485
 Operation diet preceding 684
 of election 3996
 electrocardiographic changes after 308
 exploratory in suspected neoplasm, 376
 indications for 3903
 multiple stage, 3907
 of necessity deferred 3906
 immediate 3996
 procedures 3903 3904 3995
 risk 3903 3997
 site preparation, 3928
 -opexy 399
 Ophthalmia, allergen in, 553
 gonorrheal, 219 1621
 neonatorum, 1621
 mercuric oxycyanide in, 131
 prevention 1641
 silver nitrate 134
 sympathetic 1569
 diphtheria antitoxin in, dosage 1551
 Ophthalmic See also Eye
 manifestations of blood diseases 1590
 of cardiovascular disease 1586
 of metabolic disorders, 1598
 (Table) 1591
 of neuromuscular disorders 1584
 of poisonings 1593
 of systemic infections 1601
 surgery 1557
 test of serum sensitivity 86 556
 (Fig) 554
 Ophthalmologist, indication for consultation,
 1540 3655
 Ophthalmology 1a21
 Ophthalmomaculacia, 1583
 Ophthalmoplegia, 1644
 in hyperthyroidism 1203
 Ophthalmoscope of May (Fig) 3628
 Ophthalmoscopy 1545 3628
 in arteriosclerosis, 979
 in infancy indications for 2735
 in optic neuritis, 1645
 in retinal artery obstruction, 158
 Opiates 33a3
 in atypical pneumonia, 402
 contraindications, 3859
 in renal insufficiency 2782
 in infancy dosage 2745
 in obstetrics dosage 679
 pharmacology 3856
 in shock prevention 393
 therapeutics, 3856
 Opisthotonos 3570
 Opium, 3853
 powdered, dosage (Table) 383
 preparations (Table) 3854
 prescriptions 3853
 principal alkaloids of 3854
 skin reactions caused by 3340
 -oplasty 3995
 Oppenheim reflex (Table) 3a84
 Opsonophagocytic test in brucellosis 314
 in pertussis, 281
 Optic atrophy 1644
 (Fig) 1413 14 2
 hereditary 1640
 chiasm, 1533
 nerves, abnormalities, 1640
 anatomy 3617
 injury etiology (Table) 1571
 symptoms (Table) 1571
 pigmentation, 1564
 pressure, manifestations, 158a
 neuritis, 1640
 (Fig) 1640
 tract 1533
 Optochin in pneumococcal infection, 204
 Oral administration of soluble sulfonamides 99
 burns, treatment 1639
 enanthema, diff diag (Table) 3284
 endoscopy technic, 2025
 eruptions diff diag (Table) 1668
 examination, 1656
 hygiene 16a3
 prescriptions for 1698
 drug treatment for syphilis 349
 in tuberculosis 270
 interrelationship 1679
 manifestations of allergy 1669
 of blood dyscrasias diff diag., 1676
 of dermatoses 1667
 of endocrinopathies, diff diag 1673
 in infection 1670
 of nutritional deficiencies diff diag 1674
 in poisoning diff diag., 1677
 vaccine 79
 wounds 1689
 Orange juice in infant feeding 2755
 Orbit of eye, anatomy 3619
 cellulitis of 1615
 rhinogenic, 2150

- Orbit of eye disturbances diff diag (Table) 1615
 exenteration 1559
 indications for 3994
 (Figs) 3620
 muscles 3621
 periostitis 1614
- Orchidectomy bilateral in prostatic carcinoma 2450
 indications for 3994
- Orchidopexy in cryptorchidism 2425
- Orchitis acute 2464
 complicating epidemic pleurodynia 406
 complicating mumps 482
 metastatic 2464
 mumps 2464
 syphilitic 2465
- Organ(s) animal food elements in 640
 removal 3904
 tuberculosis chronic 257
- Organisms in active acquired immunity 77
 causing infection 37
- Organotropism 37
- Orgasm 2490
- Oriental sore 3319
- Orientation definition 1693
- Ornithodoros hermsi 3100
 tunicata 3192
- Ornithosis 475
 serologic test in (Table) 60
- Oropharynx anatomy 1653
 carcinoma 1718
 congenital malformations 1693
 cysts 1712
 appearance (Table) 1714
 location (Table) 1714
 treatment (Table) 1715
 examination 1656 3390
 herpes zoster in 3113
 inflammation 1693
 local manifestations of systemic disorders 1607
 neoplasms 1714 2070
 physiology 1655
 treatment methods 1656
- Oroya fever 384
 diff diag (Table) 3211
- Orrhaphy 3395
- Ortal sodium dosage (Table) 2837
- Orthodiagraphy 800
- Orthodontia, 1665
- Orthopedic(s) office 2809
 surgeon consultation 2807
 indications 3655
 surgery 2809
 evaluation, 2808
 in rheumatoid arthritis 2924
- Orthopnea diff diag (Table) 2916
- Orthostatic albuminuria test for 3672
 circulatory insufficiency syncope in 225
- Os calcis fracture 3052
 treatment (Table) 3039
- Oscillograph galvanometer description 302
- Oscillometry 791
- Osgood-Schlatter's disease 2929
 (Fig) 2923
 lump in (Table) 2756
- Ossler node in endocarditis 1023
- Ossler's disease See *Polycythemia*
- Osmotic pressure 6
- Osmotic pressure in tissue physiology 703
- Ossification disturbances diff diag (Table) 2798
 endochondral 2795
 intramembranous 2796
- Ostealgia diff diag (Table) 2841
- Osteitis deformans 2870
 diff diag (Table) 694
 kyphosis in diff diag (Table) 3062
 pain in diff diag (Table) 2941
 phosphatase activity in diff diag (Table) 723
 fibrosa cystica due to hyperparathyroidism 1925 1926
 (Fig) 1227
 tuberculosis cystica multiplex 3071
- Osteoarthritis of spine 2859
 (Fig) 2859
 kyphosis in (Table) 3062
 pain in diff diag (Table) 2941
 tuberculous 2939
- Osteoarthropathies endocrinal diff diag (Table) 2856
 hypertrophic diff diag (Table) 2878
 pulmonary in bronchiectasis 2961
 diff diag (Table) 2904
 nails in 3459
 metabolic diff diag (Table) 283
- Osteoarthrosis 2855
 bone radiotranslucency in diff diag (Table) 2806
 cervical spine disturbances in diff diag (Table) 2818
 deformity in diff diag (Table) 2934
 diff diag (Table) 1432 2811 2882
 differentiation from rheumatoid arthritis 2362
 exercise in 2865
 Heberden's nodes in 2800
 hypertrophic basal metabolism in diff diag (Table) 719
 joint pain in diff diag (Table) 2802
 kyphosis in diff diag (Table) 3062
 lumbago in diff diag (Table) 3078
 management 2867
 rheumatoid arthritis and diff diag 2917
 roentgenographic findings in evaluation 2861
 of spine 2869
 diff diag (Table) 694
 synovial cysts in 2859
 treatment 2862
- Osteochondritis 2226
 dissecans 2962
 (Fig) 2963
 syphilitic (Fig) 2929 2932
 vertebral 2926
- Osteochondroma 2433
 diff diag (Table) 2836
 (Fig) 2437
- Osteochondroses 2926
 (Fig) 2928
- Osteoclasts 2814
- Osteogenesis imperfecta diff diag (Table) 2379
 radiotranslucency in, diff diag (Table) 2807
- Osteogenic sarcoma (Fig) 2813
 swellings in diff diag (Table) 2955
- Osteoma, 2835

- Osteoma of auditory canal 2043
 diff diag (Table) 2609
 diff diag (Table) 2636
 (Fig) 2837
 of jaws 1716
 of nasal accessory sinuses, 2067
 osteoid 2810
 diff diag (Table) 2836
 pain in diff diag (Table) 2941
- Osteomalacia, 2863
 bone radiotranslucency in diff diag (Table) 2906
 d f diag (Table) 694 2798
 (Fig) 2853
 hypophosphatemia in diff diag (Table) 724
- Osteomyelitis acute 2930
 chronic 2936
 predisposing to fracture 2942
 hermatogenous kyphosis in (Table) 3063
 humerus (Fig) 2931 2932 2933 2937
 joint pain in diff diag (Table) 2903
 lump in (Table) 2736
 lumbago in diff diag (Table) 3073
 oral 1706
 (Fig) 1706
 pyogenic 2940
 swelling in, diff diag (Table) 29 5
 treatment, 2936
 tyrothricin in 106
 tuberculous swellings of back in, diff diag (Table) 2822
- Osteopetrosis, diff dia (Table) 2709 2719
 Osteopokilosis, diff diag (Table) 2709 2719
- Osteoporosis bone radiotranslucency in diff diag (Table) 2806
 a nile estrogen therapy in 2517
- Osteotomy 2814
 indications for 2923
- Otitis, diff diag (Table) 2145
- Otitis externa, discharge in, diff diag (Table) 2150
 media, acute 2144
 chemotherapy in, 2150
 complications 2145
 diff diag (Table) 2600
 discharge in diff diag (Table) 2150
 treatment 2149
 chronic, 2151
 diff diag (Table) 2600
 discharge in diff diag (Table) 2150
 complicating in asles 414
 complicating pertu si 283
 complicating scarlet fever 179
 differentiation from bullous myringitis, 2145
 perforation in 2151
- Otogenic brain abscess 2148
 disturbances double vision in diff diag (Table) 1524
 vertigo in d f diag (Table) 2020
- Otitis media 2148
 sinus phibitus 2148
- Otology t indications for consultation, 2015 2654
 nonoperative treatment by 2036
 operative treatment by 2037
- Otomy 3993
- Otomycost 3305
 diff diag (Table) 3306 3609
- Otorrhea, diff diag (Table) 2150
- Otosclerosis 2093
 pregnancy and, 2648
- Otoscopy 3611
 in infancy indications for 2735
 in stool (Figs) 2731
 test for 2729
 in urine test for 3644
- Ovarian pregnancy 2660
- Ovaries, anatomy 2615
 arrhenoblastoma, 2575
 (Fig) 2574
 Brenn r tumor 2570
 (Fig) 2570
 carcinoma, primary cystic 2571
 solid 2571
 (Fig) 2571
 secondary 2571
 chocolate cyst of 2558
 cystadenoma pseudomucinous 2567
 serous 2567
 cysts of dermoid, 2563
 (Fig) 2563
 endometrial 2567
 follicular 2564
 incision (Fig) 2566
 germinal inclusion, 2567
 pain in left lower quadrant, diff diag (Table) 1867
 right lower quadrant diff diag (Table) 1880
 rupt ure 2577
- Dysgerminoma, 2573
 (Fig) 2572
 endometriosis of 2558
 fibroma, 2569
 granulosa cell tumor (Fig) 2573
 measurements 2649
 sarcoma, 2572
 (Fig) 2572
 teratoma 2572
 tumors clinical manifestations 2575
 complications 2577
 diff diag 2576
 malignant degeneration 2577
 suppuration, 2577
 theca cell 2574
 torsion of pedicle in 2577
 treatment, 2579
- Ovulation 2497
 bleeding 2528
 clinical disturbances 2499
 time of 2489
- Oxalate diet low in 630
- Oxidized gauze 1049
- Oxyel 1049
- Oxycephalus diff diag (Table) 2729 2774
- Oxycyanide mercuric 131
- Oxygen, 3807
 administration 3927
 nasal catheter technic 3827
 analyzer (Fig) 3830
 capacity of blood (Table) 5
 consumption, abnormalities, 716
 heart muscle function and 776
 mask 3828 (Fig) 3828
 tents 3828 (Fig) 3829
 therapy in angina pectoris 803
 in backward failure 948
 in bronchial asthma, 2109
 in coronary occlusion 937 990

- Oxygen therapy in cough 2052
 in croup 2165
 indications 3328
 in lobar pneumonia 2184
 in migraine 1509
 in primary atypical pneumonia 407
 in shock prevention 939
- Oxyquinoline derivatives in amebiasis 88
 sulfate uses 3123
- Oxytocic effect of pitressin 1179
- Oxytocics 2509
 list 3397
- Oxyuriasis 1902
- Oxyuris vermicularis 1907
 (Fig) 1894
- Ozena 2122
- P-32 5824 See also *Radioactive phosphorus*
- Pacemaker wandering 877
 electrocardiographic diagnosis 810
- Pachymeningitis interna hemorrhagica 1448
 traumatica 1454
 suppurative 1470
- Pachyonychia 8432
 congenita (Fig) 3452
- Padded plaster technique of applying 2907
- Paget's cells 2581
 disease 2879
 of breast 3223
 diff diag (Table) 3214 3219 3383
 (Fig) 2881
 of nipple 2581
 (Fig) 2580
- Pain 1474
 abdominal 3555
 generalized diff diag (Table) 1748
 in infancy and childhood diff diag
 (Table) 2730
 in left lower quadrant diff diag (Table)
 1866
 upper quadrant diff diag (Table) 1912
 in pregnancy diff diag (Table) 2667
 in right lower quadrant, diff diag (Table)
 1880
 upper quadrant diff diag (Table) 1959
 in acute hydrocele 2431
 ano-perineal diff diag (Table) 1913
 in back uterine growth and 2522
 bone diff diag (Table) 2841
 breast diff diag (Table) 692
 bronchopulmonary diff diag (Table) 897
 center medullary 1475
 thalamic 1476
 chest, in acute pleuritis 2220
 diff diag (Table) 2080
 in lobar pneumonia 2172
 dental diff diag (Table) 1680
 direct 1474
 pathways 1475
 in ear diff diag (Table) 2143
 epigastric diff diag (Table) 1788
 in eye diff diag (Table) 1562
 in face diff diag (Table) 2152
 effect diff diag (Table) 2908
 of hands diff diag (Table) 2908
 in hypogastrium diff diag (Table) 2302
 joint, diff diag (Table) 2802 2803
 low back 3072
 in lower extremities, diff diag (Table) 2868
- Pain, lumbar diff diag (Table) 2274
 menstrual drugs in 2487
 neuralgic ammonium sulfate in, 3890
 in nose diff diag (Table) 2007
 in peripheral vascular disease (Table) 298
 precordial diff diag (Table) 892
 electrocardiogram in (Fig) 814 815
 prescriptions for 3856
 referred 1477
 in renal colic 2316
 retro orbital in petrositis 2147
 in sacro iliac sprain 2896
 in scrotum diff diag (Table) 2430
 skeletal diff diag (Table) 692
 in spinal cord tumors 1431
 and stiffness of neck diff diag (Table) 3520
 in stomach diff diag (Table) 1768
 on swallowing diff diag (Table) 1722
 threshold, personality and 14
 in throat diff diag (Table) 2071
 in ulcer typical 1784
 in umbilical region diff diag (Table) 1897
 in upper extremities diff diag (Table) 2898
 visceral mechanism 1478
- Painful dermatoses diff diag (Table) 3730
- Palate cleft 1686
 disturbances diff diag (Table) 1716
 examination 3696
 mixed tumor 1717
 (Fig) 1718
 papilloma, 1714
 sagittal section (Fig) 2021
- Pallor diff diag (Table) 3506
- Palmar space incision (Fig) 3975
- syphiloderma 3283
- Palmer's amaranth, geographic distribution
 (Fig) 380
- Palpation of abdomen 3552
 technique 3363
 of chest 3532
 of spine 3572
- Palpitation, in hyperthyroidism 1403
- Palay (see) Bell's 1484
 birth 1455 2951
 (Fig) 2952
 bulbular progressive 1504
 cerebral 2943
 Erb's 2941 (Fig) 2952
 shaking 1505
- Paludism 507 See also *Malaria*
- Paludrine 522
- Pamaquine in malaria 519
- Panama six-day fever 408
- Pancreas adenoma, 1943
 apoplexy 1939
 calculus 1944
 carcinoma 1945
 cystic fibrosis of in infancy 2785
 in newborn diff diag (Table) 2782
 cysts 1945
 diabetes, 1946
 disturbances, 1937
 abdominal rigidity in, diff diag (Table)
 3747
 blood fat in diff diag (Table) 733
 diarrhea in diff diag (Table) 1841
 integrations 583
 examination methods of 1938
 extracts 1936
 in acroclerosis 3370

- Pancreas, insufficiency in adult 1938
 insular tissue 1237
 adenomas 1262
 atrophy 1262
 malignancy 1463
 mucosa, ectopic 1865
 necrosis acute 1939 (Fig) 1940
 physiology 1935
 secretion, 1936
 treatment, special methods 1936
 tumors diff diag (Table) 1937
 Pancreatotomy indications for 3994
 Pancreatin, 1936
 in infancy dosage 2744
 Pancreatitis, acute hemorrhagic 1939
 chronic interstitial, 1941
 complicating mumps 485
 Panic definition 1304
 Panniculitis relapsing febrile nonsuppurative 3405
 Panthothenic acid, 628
 deficiency experimental 3238
 sources 616
 Pantopon, dosage (Table) 3354
 Papaverine 3833
 in asthma, dosage 2103
 effect on muscle 3838
 in peripheral vascular disease 998
 in Raynaud's disease 1002
 therapeutics 3839
 in thrombo-angitis obliterans 1031
 Papilledema 1577 (Fig) 1578
 in brain tumors 1422
 diff diag (Table) 1579
 Papillitis intra-ocular 1641
 rectal 1918
 Papilloma of bladder 2322
 of gallbladder 1995
 of nose, 2066
 of oropharynx 2070
 of ureter 2326
 Pappataci fever 480
 Papule definition 2104
 of lichen planus 3389
 in lichen simplex, 3320
 moust in syphilis, 3251
 oral diff diag (Table) 1668
 split 2451
 Papulonecrotic tuberculid 2270
 diff diag (Table) 414
 rash in diff diag (Table) 2282
 Para-aminobenzoic acid 137 6 7
 deficiency experimental 3233
 in graying of hair 3449
 in Rocky Mountain spotted fever 380
 sulfonamide action on 91
 in tsutsugami hi fever 392
 in typhus 374
 in verruga peruana 386
 p-arsenophenylbutyric acid 533
 Paracetema, abdominal in congenitive failure 850
 procedure 1920
 of ear drum indication 2151
 technic 2037
 of pericardium 852
 of pl u a, 852
 Paracoccidial granuloma 493 3314
 Paracoccidiosis brasiliensis 3314
 Paracus willisiana in otosclerosis 2095
 Paraffin bath (Table) 3791
 Paraffinoma 2207
 diff diag (Table) 3268
 (Fig) 3201
 Paragonimus westermani geographic distribution 2213
 life cycle 2213
 Parakeratosis definition 3101
 Paralysis definition, 1300
 Paraldehyde 3845
 administration 3844
 dosage 3837 3844
 in infancy dosage 2743
 sedation in tetanus 229
 toxicology 3844
 Paralysis agitans 1500
 after encephalomyelitis 433
 diff diag (Table) 691
 scopolamine in 1506 3876
 of auditory nerve 1485
 in cerebral hemorrhage 1440
 management, 1443
 stages 1440
 of cervical sympathetic 1400
 crossed 1427
 of diaphragm 2094
 divers 1501
 Erb's 2776 2951
 of eye muscle abducens (Fig) 1648
 left superior oblique (Fig) 1647
 facial 2147
 diff diag (Table) 3507
 family periodic 1416
 potassium in 1416
 glottopharyngeal 1488
 of hypoglossal nerve 1489
 infantile 427 2931
 cerebral 1455
 Klumpke's 2,76
 Landry's ascending 461
 of laryngeal nerve recurrent 1483
 superior 1489
 of larvix 2091
 (Fig) 2092 2093
 of motor trigeminal 1483
 obstetric 2301
 (Fig) 2322
 oculomotor 1644
 (Fig) 15 9
 peripheral nerve injuries causing (Table) 1490
 sensory of trigeminal 1483
 spastic 2948
 of spinal accessory nerve 1489
 supranuclear of facial nerves 1485
 of sympathetic nerve (Fig) 1576
 tick bite and 41
 vagal 1483
 Paralytic bladder 2331
 deus diff diag (Table) 1878
 postoperative 4010
 strabismus mechanism 1629
 Parametritis 2603
 Paramnesia definition 1299
 Paranasal antritis acute 2124
 chronic 2151
 Paranoia, 1373
 diff diag (Table) 1366
 unvolitional electric convulsive therapy in results 1372

- Parapharyngeal space infection 2157
 Paraphimosis 2427
 Paraplegia 1439
 ■ spine fractures treatment 3012
 Parapsoriasis 3421
 diff diag (Table) 3382
 en plaques 3423
 varieties 3421
 varioidotoma 3423
 (Fig) 3417
 Parasitic infestations 3120
 diarrhea in diff diag (Table) 1841
 myocarditis 1015
 Parasitoides 3112
 sodium thiosulfate as 3108
 sulfur as 3128
 Parasitotropism 87
 Para-smallpox 424 See also *Smallpox*
 Parasympathetic nervous system See *Autonomic*
 system involuntary cholinergic
 Parathyroid adenoma 1233
 removal 1231
 glands 1223
 anatomy 3, 15
 calcium metabolism and 2790
 deficiency calcium in 604
 pharmacology 1223
 physiology 1223
 tumors diff diag (Table) 3314
 hormone 1223
 assay 1224
 in infancy dosage 2744
 in tetany 726
 therapeutics 1224 3823
 toxicology 1224
 hyperplasia 1233
 transplantation in tetany 727
 Parathyroidectomy 1231
 indications for 3804
 Paratyphoid A infection by 211
 ■ infection by 242
 infections 239
 in infancy diff diag (Table) 2731
 penicillin in evaluation 110
 Paravertebral nerve block (F₁₂) 3918
 technic 833
 in thrombophlebitis 112, 1
 Paredrine dosage 3877
 therapeutics 3893
 Paregoric in infancy dosage 2745
 Parenchyma 3
 Parenchymal disease of kidney 1035
 of liver 1035
 Parenchymatous degeneration (Fig) 3
 of kidneys 2362
 Parenteral administration of water 587
 diarrhea 2781
 Parenthood planned 2502
 Paresis after encephalomyelitis 453
 general 1377
 diff diag (Table) 1974
 optic manifestations in 1835
 treatment 1379
 trypanamide in 120
 juvenile 1380
 Parasthesia 1342 3750
 Parosmia & oculo-glandular syndrome 1623
 Parkinson's disease See *Paralysis agitans*
 Paronychia, 3434
 definition 3073
 diff diag (Table) 3207
 monilia (Fig) 3433
 treatment (Fig) 3072
 Parorexia definition 1769
 Parosmia diff diag (Table) 2120
 Parotitis 1703
 epidemic 480
 diff diag (Table) 3517
 hypogonadism due to 2413
 postoperative 4015
 diagnosis 4016
 prevention 1709
 suppurative diff diag (Table) 3517
 symptoms 4016
 treatment 4016
 Paroxysmal auricular fibrillation 585
 litter 583
 hemoglobinemia diff diag (Table) 1074
 hemoglobinuria 1075
 nocturnal dyspnea 612
 stage of pertussis 279
 tachycardia diff diag (Table) 83
 digitalis in 538
 nodal 881
 quinidine in 809
 ventricular 588
 Parry's disease See *Hyperthyroidism*
 Parsley effect on muscle 3998
 Passive congestion chronic 541
 exercise 3750
 immunity acquired 81
 transfer test technic 550
 Pastes in skin diseases 3188
 Pasteur vaccine in hydrophobia 440
 Pasteurella causing disease 39
 infections 321
 pestis bacteriology 321
 therapy antibiotics in 111
 sulfonamides in 92
 tularemia antibiotics in 111
 sulfonamides in ■
 Patch test in allergy technic 536
 in contact dermatitis evaluation 3333
 tuberculin test (Fig) 264
 technic 263 536
 Patella dislocation of 2930
 treatment (Table) 2977
 fracture 3045
 treatment (Table) 3038
 Patellar reflex (Table) 3334
 Patent ductus arteriosus 257
 (Fig) 658
 manifestations (Table) 904
 Paternity tests 3708
 Pathologic fractures diff diag (Table) 2816
 in Paget's disease 2879
 Pathologist clinical indications for consulta-
 tion 3635
 Patient morale of in infectious disease 73
 Patrick sign 3572
 Patulin in common cold 394
 (Table) 103
 Paul procedure diet after 639
 test in smallpox 427
 Paul Bunnet test for infectious mononucleosis
 463
 Pavor nocturnus 1347
 Pecten pastes in skin diseases, prescriptions
 3123
 powder in frostbite 3173

- Pertoriloquy diff diag (Table) 3512
 Pederasty 2412
 Pediatrics, 2723
 Pediatric, 200³
 indications for consultation, 36.5
 Pedicle flaps, 3931
 (Fig) 3933
 Pediculosis capitis, 3182
 diff diag (Table) 3254
 (Fig) 3183
 mercuric chloride in 190
 treatment, 3183
 corpora, 3185
 diff diag (Table) 3263 3360 3363
 in infancy diff diag (Table) 3147
 lymphadenopathy in, diff diag (Table) 1157
 pigmentation in, diff diag (Table) 3155
 pubes, 3153 3185
 diff diag (Table) 3275
 vestimentorum 3183
 xylene in, prescription, 3181
 Peeling preparations 3374
 Pel-Ebstein fever = Hodgkin's disease 1140
 Peliosis rheumatica, 3424
 Peluzens-Merabacher's disease 1418
 Pellagra, 316
 diff diag (Table) 3163 3297 338
 psychosis in, 1333
 Pili pruritus dermatitis of niacin deficiency (Fig)
 64
 Pelletierine, 1896
 (Table) 1898
 Pels-Macht test in pemphigus, 3407
 Pelvic abscesses 1923
 in puerperal endometritis 2603
 bony examination, 3572
 dislocations, 2770
 signs (Table) 2965
 treatment (Table) 2965
 female, anatomy 3641
 bones in (Fig) 3641
 measurements, normal 364
 relation to skeleton (Fig) 3643
 fracture 3003 3011
 treatment (Table) 3005
 hematocoele 2680
 male (Fig) 2925
 section (Fig) 3635
 peritonitis gonorrheal, 2608
 in puerperal endometritis 2604
 rel. See *Renal pelvis*
 viscera, female (Fig) 3643
 Pemphigus 3405
 of conjunctiva, 3407
 (Fig) 1565
 diff diag (Table) 175 4 2, 3219
 (Fig) 3411
 foliaceus, 3406
 neonatorum 352
 oral in infestations 1667
 Pels-Macht test in 3407
 pigmentation in, diff diag (Table) 3155
 rash in diff diag (Table) 3290
 tests in, 3407
 treatment 3408
 local 3410
 vegetans 3406
 vulgaris 3406
 Penicillin acid (Table) 103
 Penicillin, 106. See also *Antibiotic agents*
 absorption, 103
 in actinomycosis, 49³
 action of mechanism 110
 aerosolization, 2041
 in agranulocytosis, dosage (Table) 1049
 antibiotic activity 110
 antitoxin administration and, 11³
 B (Table) 103
 in botulism, 313
 in brucellosis, 321
 chemistry of 106
 in coccidioidomycosis, 40³
 in common cold, 394 396
 in deep dermatophytoses, 3316
 desperation therapy 114
 in diphtheria, 311
 in dislocations, dosage 2964
 in empyema thoracis, 223
 in encephali 444
 in endocarditis, 311
 in erysipelas, 170
 in erysipeloid, 323
 excretion, 106
 in eye diseases, 1533
 in fractures (Table) 2984
 in fusospirochetosis, 357
 in gas gangrene, 301
 in general paresis, 1579
 in gonorrhea, 223
 prevention, 222
 in gynecologic infections, 2596
 in Haverhill fever 365
 indications for 11
 in infectious arthritis, 2910
 isolation, 106
 in lobar pneumonia, 2184
 in meningitis, 216
 in minor surgery 3313
 prophylactic, 3311
 nebulization in common cold, 2119
 in noma, 1699
 ointment in dermatoses, 3124
 in eye diseases, 1533
 in ophthalmia neonatorum, prevention 161
 organisms insensitive to 111
 sensitive to, 111
 in plague, 322
 in pneumonitis, acute 2127
 in pneumococcal infection 406
 a polymy. L.H. 463
 preparations, 107
 prophylactic therapy 114
 in puerperal infection dosage, 2606
 in pulmonary abscess x-ray 103, 109
 in respiratory disturbances, dosage 2029
 in Rocky Mountain spotted fever 300
 in scarlet fever 187
 in septic sore throat, 186
 serum therapy and, 112
 in skin diseases, 3123
 in smallpox, 428
 in sodoku, 364
 source, 106
 standardization, 106
 in staphylococcal infections 154
 in streptococcal infections 166
 streptomycin and indications, 113
 sulfonamide therapy and, 112
 in surgery 11
 synergistic action 93

- Penicillin* in syphilis 340 349
 results 341
 toxicity in 341
 in tetanus 298
 toxicity 112
 in tsutsugamushi fever 382
 in typhus 374
 in urinary antiseptics 2257
 in venereal infections 2452
 in verrucous endocarditis 1020
 wax in osteomyelitis of alveolus 1707
 in yaws 353
Penicillin fast organisms sulfonamide and 93
Penicilliosis 500
Penis actinomycosis 2458
 amputation in cancer 2440
 anatomy 2393 2634
 anomalies 2422
 cancer 2439
 differentiation from venereal lesions 2440
 chancre (Fig) 2335
 chancroid 2423
 (Fig) 2289
 clasp (Fig) 2254
 contusion 2427
 in dermatoses 2458
 detumescence 2402
 diphtheria 2435
 disturbances diff diag (Table) 2453
 fibrosis 2434
 in *granuloma inguinale* 2437
 (Fig) 476
 hematoma 2426
 in herpes 2437
 herpes simplex of (Fig) 3299
 in lymphopathia venereum 2437
 (Figs) 3277
 molluscum contagiosum (Fig) 3289
 psoriasis of (Fig) 3417
 rupture 2428
 sarcoma, 2440
 scabies 2459
 strangulation 2428
 structure (Fig) 2394
 subluxation 2428
 syphilis 246
 thrombosis of dorsal vein 2428
 in trichomoniasis 2458
 tuberculosis 2455
 tumors benign 2439
 wounds 2426
Pentagone 522
Pentavalent arsenicals structure 140
Pentobarbital sodium dosage (Table) 3837
Pentonucleotide dosage (Table) 1019
 in infancy dosage 2745
Pentosuria diff diag (Table) 3677
Pentothal sodium in intravenous anesthesia
 3923
 (Table) 3837
 in minor surgery (Table) 3914
Pepsin 1754
 inactivators 1756
Peptic ulcer 1750
 bleeding treatment, 1794
 diff diag 1784
 erosive 1723
 perforation, 1790
 treatment 1790
 surgical 1794
 Peptonized milk 638
 Perception definition 1293
 Percomorph liver oil 6 D 821
 Percussion of abdomen 3587
 abnormalities of chest wall diff diag
 (Table) 3538
 of chest technic 3533
 sounds 3533
 abnormal 3536
 tenderness 3555
 in brain tumors 1421
 Perforating ulcer 3228
 (Fig) 3229
 Perforation in appendicitis 1882
 in carcinoma of stomach 1916
 hemorrhage and 233
 in peptic ulcer 1790
 in typhoid fever 231
 Perforum dermatitis 3177
 diff diag (Table) 3163
 pigmentation in diff diag (Table) 3165
Personal abscess 3079
Periapical abscess chronic 1703
 (Fig) 1682
Periarteritis nodosa 1027
 coronary arteritis in 1015
 diff diag (Table) 911
 electrocardiogram in (Fig) 836
 fever in diff diag (Table) 1028
 (Fig) 1028
 renal 2371
Pericardial aspiration technic 862
 effusion 1008
 electrocardiographic changes in 808
 (Fig) 1028
 fixation in pericarditis 1011
 friction rub 3541
 shuffle 3541 3549
Pericardiolysis indications 8093
Pericarditis acute fibrinous 1007
 friction rub in 1007
 azotemic, symptoms 1008
 chronic adhesive 1010
 Broadbent a sign in, 1011
 cardiolysis in, 1011
 clinical manifestations 1011
 diff diag (Table) 863
 complicating epidemic pleurodynia 406
 in coronary occlusion 935
 diff diag (Table) 892
 electrocardiographic diagnosis 810
 pneumococcal symptoms 1008
 of rheumatic fever 1009
 electrocardiogram in (Fig) 819
 symptoms 1007
 serous 1008
 electrocardiogram in 1009
 electrocardiographic change in 1009
 roentgenographic diagnosis 1009
 suppurative 1010
 tuberculous 1009
 clinical manifestations 1008
 uremic 2279
Pericardium anatomy 3245
 paracentesis, 852
 sarcoma, 867
 vascularization 3993
Pericementitis 1701
Pericholecystitis 2009
Perichondritis of larynx 2184

- Pericolic abscess 1928
 Perihepatic abscess 1928
 Perimeter Fernic Rand (Fig) 1511
 Perineorrhaphy indications for 3995
 Perinephric abscess 2360 (Fig) 2360
 pathology 2359
 Perinephritis suppurative 2359
 Perineum dermatoses of diff diag (Table) 290
 disturbances diff diag (Table) 2548
 female, anatomy 3642
 examination 3646
 lacerations, 2536
 (Fig) 2536
 male examination 3650
 relaxation 2535
 thickening of in pericarditis 1010
 wounds 5039
 treatment 3953
 Perineuritis of eye 1640
 Periodontoclasia, 1700
 Periosteal deposition, 2795
 Periostitis orbital 1614
 syphilitic 2937
 (Fig) 2939
 of tibia (Fig) 2938
 Peripheral circulation test for 791
 mononeuropathies 1489
 nerves cutaneous fields of (Figs) 1494 1495
 1496 1497
 grafts 2812
 infection diff diag (Table) 1461
 injuries 1458
 reaction patterns in (Table) 1476 1477
 (Table) 1490
 neoplasms 1435
 neurolysis 2812
 organic disturbances 3228
 resection 2812
 neuritis (Fig) 618
 vascular disease arteriosclerotic 994
 causes (Table) 960
 diff diag (Table) 996
 manifestations 969
 obstruction 709
 vasculature examination 3576
 vessels examination 119
 Perirhinal hematoma, 2330
 insufflation, indication 2345
 pneumoradiography 2254
 Peristalsis care of in infectious diseases 72
 restoration of postoperative 4012
 reverse, syndrome of 178
 stimulation of drugs used 3874
 in infancy dosage 2745
 of stomach 1741
 visible 1743
 diff diag (Table) 3357
 Peritoneum anatomy 1919 3554
 bands and veils of congenital, 1923
 carcinomatous 1934
 contrast roentgenography in (Table) 3742
 disturbances clinical 1922
 abdominal rigidity in diff diag (Table) 1747
 diagnosis methods, 1920
 treatment special methods 193
 fluid examination 1923
 in infancy indications 2740
 irrigation in uremia, 2233
 Peritoneum physiology 1919
 Peritoneoscopy 1920
 Peritonitis 19.3
 acute complicating intra abdominal disease 1931
 adhesive 1933
 ascites in diff diag (Table) 1021
 aseptic, 1931
 chronic 1932
 exudative 1926
 fibrinous 1924
 gangrenous 1927
 gonococcal, 1930
 in infancy diff diag (Table) 2750
 from liver abscess 626
 in newborn 1932
 from penetrating wounds 1932
 in peritonitis nodosa 1028
 pneumococcal 1929
 postoperative 1932
 proliferative 1934
 soft belly 196
 streptococcal hematogenous 1928
 lymphogenous 1929
 suppurative localized 1927
 treatment, nonoperative 1925
 operative 1927
 tuberculous 1930
 Peritonsillar abscess 2155
 diff diag (Table) 2732
 in infancy diff diag (Table) 2732
 Perilæche 1693
 diff diag (Table) 3463
 (Fig) 1696
 in riboflavin deficiency 1675
 Pernicious anemia, 1077
 blood findings in 1078
 bone marrow count in (Table) 1043
 carcinoma of stomach in 1081
 electrocardiogram in 1080
 (Fig) 1079
 hyperuricemia in, diff diag (Table) 737
 mental symptoms, 1386
 obstruction of vein in (Fig) 1569
 oral manifestations 1676
 pigmentation in, diff diag (Table) 3243
 of pregnancy 2646
 spinal cord involvements in, 1078
 treatment 1631
 malaria, 514
 vomiting of pregnancy 2637
 Pernio (Fig) 3160
 Pernoston dosage (Table) 3837
 Peroneal sign 724
 Peroral endoscopy technic 2025
 Peroxidase stain test 3707
 Perseveration definition 1293
 Personality definition, 1299
 disorders 13.9
 management 1362
 types 1360
 double definition, 1299
 hysteric 1553
 inventory tests 135
 normal 1291
 pain threshold and 14
 of patient in history taking 3469
 prepsychotic 1368
 schizoid 1364
 Perspiration See Sweat.

- Perthes test 3351
 (Fig) 3340
 Pertussis 278
 antitoxin 283
 catarrhal stage 279
 clinical manifestations 279
 complications 282
 convalescence 280
 convalescent serum 283 284
 cough plate (Fig) 281
 diagnosis 280
 diff diag 282
 (Table) 2730
 drug therapy in 284
 electron microscope view of organisms in 139
 encephalopathy 447
 epidemiology 278
 immune serum in evaluation 82
 immunity after 76
 immunity to 279 283
 infectiousness of 278
 laboratory tests in 281
 paroxysmal stage 278
 pathology 279
 prevention 282
 roentgenographic examination 282
 serologic test in (Table) 60
 stridor in diff diag (Table) 2168
 treatment 282
 vaccine administration 283
 Perurethral abscess 2330
 Nervousness definitions 1503
 in neuroses 1515
 Pes cavus 3087
 (Fig) 2430
 planus congenital 3085
 (Fig) 2330
 valgoplanus 3078
 (Fig) 3096
 Peasary (ies) 2533
 Gehrung (Fig) 2540
 Hodge 2540
 Menge (Fig) 2541
 Smith (Fig) 2540
 technic of introduction 2540
 Thomas (Fig) 2540
 Petechia definition 3104
 dermato es diff diag (Table) 2398
 in endo arditis 1023
 oral diff diag (Table) 1668
 Petit mal 1515
 Petrusage 3166
 Petrolatum as lubricant 3124
 preparations 1925
 in infancy 4745
 Petroleum carcinogenic, 3015
 jelly as lubricant 3124
 Petrositis 2147
 Peyer's patches in typhoid fever (Fig) 228
 Pfeiffer's bacillus 293
 reaction in cholera, 250
 pH See Hydrogen ion concentration
 Phagocytosis 75
 Phalanges fracture 3037
 treatment (Table) 3016
 Phagodora dosage (Table) 3937
 Phantom tumor in intestinal neuroses 1947
 Pharmacology animal vs human 314
 test tube vs animal 114
 Pharmacopeia United States 3799
 Pharmacotherapy See also Drugs
 general principles 3799
 of skin diseases, 3112
 vehicles 3820
 Pharyngeal tonsils 3603
 Pharyngitis herpetic 434 2137
 membranous 2137
 mycotic stridor in diff diag (Table) 2733
 ulceromembranous 2137
 Pharynx carcinoma 1710
 cysts 1714
 foreign bodies in 2046
 function 3399
 innervation 3699
 lymphatic structure 3603
 lymphosarcoma 1710
 neuroses 2090
 posterior aspect (Fig) 3319 3600
 sagittal section (Fig) 2021
 tumors benign 1716
 ulcerations 2101
 Phase variation bacterial 141
 Phenacetin 3915
 Phenacetin evaluation 3333
 Phenobarbital in coronary occlusion 900
 dosage pre anesthetic 3918
 (Table) 3837
 in epilepsy 1517
 in infancy dosage 2745
 prescriptions 2127 3839
 in rheumatoid arthritis 2907
 Phenobarbital atropine prescription 1727
 Phenol for boils 3138
 for furuncles 3138
 poisoning clinical manifestations (Table)
 757
 diagnosis (Table) 757
 occupations susceptible to (Table) 757
 treatment (Table) 757
 uses 3124
 Phenolphthalein cathartic dosage 1829
 Phenolsulfonphthalein excretion renal func-
 tion and 3659
 (Table) 2243
 in infancy dosage in tests 2745
 skin reactions caused by 3340
 tests 2242 3628
 Phenothiazine in oxyurias 1808 1003
 Phenylhydrazine dosage (Table) 1049
 in polycythemia 1094
 Phenylmercuric nitrate as fungicide 3123
 Phenylsacrylate dosage (Table) 5632
 in photosensitivity prescription 3125
 Pheochromocytoma, adrenal 1264
 diff diag (Table) 910
 differentiation from epilepsy 1265
 phases definition 1504
 Phlebotomy acquired 2126
 congenital 2122
 gonorrheal (Figs) 2422 2123
 Phlebitis 1123
 in convalescence 238
 fever in 25
 of internal jugular vein 2157
 in peripheral vascular disease (Table) 908
 septic 1446
 virus 2143
 Phlebotomy, 909
 Phlebotomy 1124
 prevention 1124

- Phlebotomus** as vector (Table) 42
 fever 450
 verrucarum (Fig) 3191
- Phlebotomy** bloodless 950
 in chronic glomerulonephritis, 2387
 in congestive failure 950
 in hepatic congestion 1938
 in hypertensive encephalopathy 916
 indications for 832
 in polycythemia, 1094
 technique, 853 3780
- Phlegmasia alba dolens** 711 2604 2648
- Phlegmonous ophthalmitis** 2786
- Phobias**, definition, 1301
 list, 1301
 in nervous 1341
- Phonocardiogram** of normal heart (Fig) 800
- Phonocardiography** 801
- Phosgene** as lung irritant 745
- Phosphatase activity** diff diag (Table) 728
 disturbances 729
 increase in diff diag (Table) 728
 in prostatic carcinoma, 2450
 (Table) 6
- Phosphates**, 615
 decrease in blood diff diag (Table) 728
 increase in blood diff diag (Table) 727
 preparations, 615
 retention, calcium metabolism and 729
 therapeutics, 8824
- Phosphorus**, 604
 hepatitis due to 1964
 metabolism 605
 disturbances 729
 poisoning clinical manifestations, 757
 occupations susceptible to 757
 ophthalmic manifestations, 1597
 oral manifestations 1678
 treatment 757
 radioactive, 605
 therapeutics, 605
 in serum (Table) 6
- Photophobia**, diff diag (Table) 1574
 in riboflavin deficiency (Fig) 624
- Photophthalmia**, 1550
- Photopsis**, diff diag (Table) 1535
- Photoretinitis** 1573
- Photosensitivity** 3176
 drug eruptions and, 3538
- Photosensitizing drugs**, precautions 3342
- Phototherapy** 1549
- Phrenectomy** indications for 3994
- Phrenic nerve avulsion**, 2059
 injuries, motor signs in, 1490
 surgery in tuberculous pneumonitis 2209
- Physian cap of gallbladder** 1993
 (Fig) 1993
- Phthiasis palpebrarum**, 1610
- Phthisiologist**, 901
- Physical activity** restriction in backward
 failure 946
 allergy 3351
 diagnosis, technique 3468
 examination, age, 3478
 in allergy 334
 economic factors, 3479
 functions, 3478
 general observations (Table) 3483
 in vital state, 3478
 in newborn infant, 2726
- Physical examination**, race 3479
 record keeping 3477
 sex, 3478
 exercise, 3736
 fever 23
 therapy See *Physiotherapy*
- Physician** as historian 3470
 institutional vs practitioner 27
 as psychotherapist 3752
- Physiological anemia** of pregnancy 1088
- Physiotherapist** 3784 3822
- Physiotherapy** 3784
 in acne vulgaris 3364
 by baths (Table) 3791
 in circulatory disturbances 851
 by electricity 3792
 for eye, 1547
 in fracture, 3002
 in home 3784
 in infectious arthritis, 2910
 in obesity 699
 office 3784
 in polyneuropathies, 1500
 by radiant energy 3793
 (Table) 3794
 in rheumatoid arthritis, 2916 2923
 by use of cold, 3785
 (Table) 3785
 of heat, 3787
 (Table) 3786
- Physostigmine** dosage (Table) 3874
 effect on cardiac muscle 3888
- Phytobezoar** with gastric ulcer (Fig) 1807
- Pica**, definition, 1769
 diff diag (Table) 1776
- Pick's disease** 1934
 in constrictive pericarditis, 1011
 psychosis 1381
- Pickrell's solution**, 1639
- Picric acid suppository** prescription 2509
- Picrotoxin**, 3870
 in barbiturate poisoning 3845
- Pigmentary degeneration**, definition, 9
 syphiloderma 3235
- Pigmentation** in Addison's disease 1273
 (Fig) 1274
 definition, 3104
 of face diff diag (Table) 3507
 generalized diff diag (Table) 3242
 localized diff diag (Table) 3154
 of nails, 3454
 oral, diff diag (Table) 1669
 of sclera, 1591
 in tuberous sclerosis 1414
 in von Recklinghausen's disease, 3 06
- Pilocarpine**, dosage (Table) 3874
- Pilonidal cysts** congenital 1911
 sinus, diff diag (Table) 3369
 excision, 3944
 (Fig) 3945
- Pilots airplane blackout** in, 296
- Pineal gland**, 1184
 anatomy 1184
 calcification, 1184
 tumors, 1183
- Pinguecula** (Table) 1591
- Pink disease**, 3143
 (Fig) 3143
- Pink-eye** 1621
- Pinta**, 333

- Pinta cutaneous manifestations (Table) 3246
 diff diag (Table) 3297
 (Fig) 354
 methods of diagnosis (Table) 3246
 by smear 51
 pigmentation in diff diag (Table) 3165
 Pinworm infestation 1902
 size (Fig) 1894
 Pitch carcinogenic properties of 3215
 Pitcher plant 3890
 Pitocin 1178 2511
 Pitressin 1178
 in diabetes insipidus dosage 1183
 in herpes zoster 437
 test in epilepsy 1516
 therapeutics 1179
 Pituitary basophilism 1169 See also *Cushing's disease*
 diabetes 1247
 dwarfism 1164
 roentgenologic findings in 1165
 gland 1152
 anatomy 1152
 anterior 1163
 abnormalities 1174
 acidophile hypersecretion 1153
 basal metabolism in diff diag (Table) 719
 basophilic cells hyperactivity 1159
 clinical disturbances 1153
 (Table) 1154
 deficiency in adolescence 1166
 in adult 1169
 basal metabolism in diff diag (Table) 719
 in childhood 1164
 extract effect on muscle 3888
 therapeutics 3896
 gravitation shock in 925
 hormones (Table) 1154
 in lactation 2520
 tumors 1175
 posterior 1178
 anatomy 1152
 deficiency 1180 See also *Diabetes insipidus*
 preparations 1178
 in infancy 2744
 therapeutics 1179
 toxicity 1179
 infantilism 1164
 Pituitrin 1178
 Pityriasis lichenoides et varioliformis acuta 3423
 roses 3410
 diff diag (Table) 175 412
 (Fig) 3411
 lesion in 3410
 pigmentation in diff diag (Table) 3165
 rash in diff diag (Table) 3282
 roses like eruption caused by drugs 3411
 rubra, 3384
 pilaris 3412
 diff diag (Table) 3298 3383
 pigmentation in diff diag (Table) 3155
 versicolor 3300
 Pityrosporum ovale 3432
 Placebo, in psychotherapy 1320
 Placenta praevia 2661
 (Figs) 2661
 Placenta praevia pathology 2663
 radiography in 2664
 vaginal bleeding in diff diag (Table) 2664
 premature separation 2665
 (Fig) 2666 2667
 vaginal bleeding in diff diag (Table) 2644
 Placental transfer of drugs 3810
 Plague 321
 animal inoculation in (Table) 63
 antiserum, 322
 bacillus vaccine 322
 evaluation 79
 bubonic 322
 culture in (Table) 54
 cutaneous manifestation (Table) 3246
 diagnosis 322 3246
 by smear in (Table) 51
 epidemiology (Fig) 320
 flies as vector in (Table) 42
 immunity after 76
 immunity to 321
 immunization technique in 322
 lymphadenopathy in diff diag (Table) 1136
 ocular manifestations 1603
 penicillin in 322
 pneumonitis 322 2102
 serologic test in (Table) 60
 sulfonamides in 32 322
 transmission 321
 treatment 322
 Plant dermatitis prophylaxis 3333
 Plantar reflex (Table) 3584
 Syphiloderma, 3283
 wart 3090
 Plantaris tendon rupture 2937
 site (Fig) 2938
 Plaque fibrous of penis 2454
 Plasma cells normal count (Table) 1013
 chemistry 5
 fractionates 81
 infusion 3778
 in shock prevention 938
 physiology 703
 volume decrease in 706
 Plasmodium 519
 administration 519
 compound in malaria 593
 dosage 519
 toxicity 519
 Plasmodium falciparum differential character
 istics 519
 (Fig) 511
 life cycle 507
 malariae differential characteristics 510
 (Fig) 512
 vivax, differential characteristics 510
 (Fig) 508
 Plasmosomes 3
 Plaster boot 2996
 gauntlet 2995
 hip spica 2997
 long leg 2996
 padded technique of applying 2997
 removal in fracture 2999
 specialist, for casts 2992
 unpadded 2992
 Plaster-of-paris bandage in elbow or forearm
 fracture (Fig) 2999
 use 2993

- Plaster-of paris jacket, 2907
 Plastic operations on lids 1557
 Plateau pulse, diff diag (Table) 3580
 Platelets See *Blood platelets*
 Platyhelminthes causing disease 41
 Pleasur-pain, Freud's definition, 1338
 Pleomorphism bacterial, 141
 Plethora, definition 11
 Pleura, anatomy 3530
 inflammation. See *Pleuritis*
 pain in, diff diag (Table) 892
 paracentesis of in circulatory disturbances, 852
 tumors benign, 2082
 malignant, 2062
 Pleural effusion 2212
 complicating tularemia, 324
 diff diag (Table) 2082
 (Fig) 236 2221
 massive, 2221
 signs 2222
 fluid, aspiration, 2080
 diagnostic 2222
 friction rub, 3341
 Pleurisy diaphragmatic, 2220
 with effusion, 2221
 in periarthritis nodosa 1028
 serofibrinous in rheumatic fever 190
 tuberculous 257
 Pleuritis, acute, 2219
 bacteria in 2220
 fibrinous 2220
 chronic 2223
 diff diag. (Table) 405
 fibrinous, complicating epidemic pleurodynia, 406
 serous effusion in pathology 2219
 Pleurodynia epidemic, 403
 diff diag. (Table) 404
 Pleuropericardial rub 2220
 Pleuropulmonary infection in infancy diff diag (Table) 2751
 Pleuruses, cervical in relation to skeleton (Fig) 3582
 disturbances (Table) 1493
 lumbar in relation to skeleton (Fig) 3583
 Plumbum, 762
 oral manifestations 1677
 Plummer's classification of hyperthyroidism 1205
 Plummer Vinson syndrome, 1728
 Plumpness obesity vs 696
 Pneumatocele in chronic paranasal sinusitis 2135
 Pneumocephalus, traumatic, 1454
 Pneumococcemia, 204
 diff diag (Table) 3334
 Pneumococcus, 199
 agglutinins, demonstration of techniq 202
 bacteriology 199
 conjunctivitis 1620
 tyrothricin in, 106
 (Fig) 47
 infections, 199
 antibiotics in, 111
 carriers in, 203
 circulatory disturbances in (Table) 954
 clinical manifestations, 204
 culture in (Table) 54
 diagnosis 201
 Pneumococcus infections, diagnosis, animal in
 jection in (Table) III
 by smear in (Table) 51
 epidemiology 203
 fever in, diff diag (Table) 1006
 prevention 207
 serum therapy 203
 sulfonamides in 92
 in children (Table) 206
 transmission 203
 treatment, 204
 pericarditis, symptoms 1003
 peritonitis 1939
 pneumonia See *Pneumonia lobar*
 pneumonitis 2191
 quelling of (Fig) 202
 serologic test in (Table) III
 skin test in, 202
 (Table) 60
 types 200
 typing Neufeld techniq, 201
 in lobar pneumonia, 2176
 Pneumococcus 2065
 diff diag (Table) 405
 Pneumo-encephalography in infancy indications 2737
 Pneumolysis 2033
 in tuberculous pneumonitis 2208
 Pneumonectomy 2039
 indications for 2204
 Pneumonia alba, 2771
 aspiration, 2048
 in tetanus, 205
 eosinophilic, 2104
 in erysipelas 1,0
 hypostatic, 2189
 influenzal, 237 399 2189
 lipid, 2043
 differentiation from tuberculous 2051
 (Fig) 2049
 lobar 2171
 anoxemia in, 2174
 cardiac complications 2178
 causative organisms 2171
 chest pain in 2173
 chill in 2173
 complications in 2177
 cyanosis in, 2174
 diff diag (Table) 405 2182
 drugs in, 183
 to be avoided, 2183
 dyspnea in 2173
 fever in, 2173
 hyponatremia in, diff diag (Table) 729
 inflammation in (Fig) 17
 oxygen therapy in, 2184
 necrotizing 2195
 pain in, diff diag., 2181
 pathology 217
 penicillin in, 2184
 roentgenological findings 2174
 (Fig) 2174
 shock in, 233
 sputum in, 2173
 sulfonamides in, 2184
 tachycardia in, 21,3
 in newborn, 2771
 nonlobar types, 2185
 pericarditis in, 1007
 pneumococcal lobar 204

- Pneumonia primary atypical** 400
 diff diag 401 404
 (Fig) 402 403
 in Rocky Mountain spotted fever 378
 temperature curve in 45
 in tularemia 324
 unresolved 2180
- Pneumonic plague** 322
- Pneumonitis acute** 2185
 complications 2195
 diff diag (Table) 401 2182
 organisms in 2185
 roentgenographic findings in 2194
 treatment 2197
- B mucosus capsulatus** 2192
- chronic nontuberculous** 2209
 primary 2210
 tuberculous 2199
 blood studies in 2205
 caseous (Fig) 2200
 complications 2206
 diff diag 2206
 estimation of activity 2201
 fever charts in 2201
 lesions classification 2195
 phrenic nerve surgery in 2209
 physical examination in 2203
 pneumothorax in 2208
 prognosis 2207
 roentgen findings 2204
 (Fig) 2204
 thoracoplasty in discussion 2209
- complicating pertussis** 280
- due to brucellosis** 2192
- eosinophilic** 2104
 allergen in 353
 diff diag (Table) 404
- Friedländer** 2192
- H influenzae** 2190
- hypo tatic in backward failure** 943
- influenzal** 2188
- plague** 2192
- pneumococcal** 2191
 peritonitis complicating 1930
- postoperative** 2189
 diff diag (Table) 4016
 treatment (Table) 4016
- spirochetal** 2190
- staphylococcal** 2190
- streptococcal** 2190
- tuberculous acute** 2189
 chronic 2199
 tularemia 2192
 virus 2188
- Pneumonotomy** 2039
 indications for 3993
- Pneumoperitoneum in perforated peptic ulcer** 1790
 (Fig) 1790
 in tuberculous endometritis 2811
- Pneumoradiography perirenal** 2254
 (Fig) 2253
- Pneumothorax artificial complications** 2034
 (Fig) 2208
 indications 2033
 refills in 2036
 technic 2033
 in tuberculous pneumonitis, contraindications 2209
 indications 2208
- Pneumothorax clinical manifestations** 2035
 complicating pertussis 282
 diff diag (Table) 2035
 (Fig) 2034
 in newborn 2771
 set (Fig) 2031
 spontaneous 2035
 tension relief 3958
- Podagra** 2870
 (Fig) 2871
- Poikiloderma atrophicum va culare** 3379 3419
 pigmentation in diff diag (Table) 3155
- Poikilodermatomyositis** 3374
- Poison ivy desensitization prophylactic** 3393
- Poison antidotes indications (Table)** 3818
 kit contents (Table) 3818
- Poisoning** 743 3818 See also under specific names of gases and metals
 abdominal rigidity in diff diag (Table) 1746
 albuminuria in diff diag (Table) 2371
 azotemia in diff diag (Table) 2276
 barbiturate acute 3842
 chronic 3843
 convulsions in diff diag (Table) 1519
 diagnosis of general principles 743
 diarrhea in diff diag (Table) 1840
 digitalis, 860
 double vision in diff diag (Table) 1523
 drug 3816
 fever due 24
 food diff diag (Table) 240
 staphylococcal 153
 hypopyrexia in (Table) 22
 iodide 612
 jaw in diff diag (Table) 1705
 laxative diff diag (Table) 241
 management 3817
 nicotine 3984
 nongaseous diff diag (Table) 750
 ophthalmic manifestations 1595
 oral 1677
 plasmochin 519
 ptosis in diff diag (Table) 1649
 quinine 862
 treatment 519
 reduction in visual acuity in (Table) 1639
 teating in diff diag (Table) 1525
- Poisons common names of (Table)** 3317
- Polar bodies bacterial** 138
- Polioencephalitis hemorrhagic** 1802
- Polioomyelitis acute anterior** 457
 diagnosis 461
 diff diag 460
 (Table) 23 192 443
 epidemiology 457
 (Fig) 2950
 immune serum ■
 immunity 453
 incubation period 459
 lump in (Table) 2736
 neutralization test in 60
 paralytic stag 460
 prevention 465
 quarantine data on (Table) 65
 serologic test in (Table) 60
 spinal cord involvement, diff diag (Table) 1461
 throat in diff diag (Table) 3601
 transmission 458
 treatment 462

- Polioomyelitis, acute anterior treatment, cur**
 are in 464
 infocostin in, 464
 Lenny 463
 neostigmine in 464
 orthopedic, 2251
 spinal drainage in, 464
 vaccine evaluation, 79
 chronic, 2584
 anterior 2588
- Pollen atopy** 542
 sensitivity tests for 539
- Pollinosis, 9007**
- Pollitzer's solution** in lichen planus, 5323
- Polyarthralgia, diff diag (Table)** 2502
- Polyconia** 1362
- Polycystic kidney disease** 2291
 diff diag., 2292
 pathology 2291
- Polycythemia, 1022**
 basal metabolism in, diff diag. (Table) 20
 circulatory disturbances in (Table) 935
 in congenital heart disease 962
 definition, 11
 phlebotomy in, 652
 pulmonary hypertension and, 919
 scope in, 923
 vera, 1023
 bone marrow count in (Table) 1045
 diff diag (Table) 911
 irradiation in 1053
 oral manifestations 1677
- Polydactylism** 2824
- Polymenorrhea** 2557
- Polymyositis, infectious, polymyositis va., 462**
- Polymyopathies, 1499**
 etiology 1499
- Polyopia, in cataract, 1394**
- Polyp(s) of cervix uteri, 2550**
 of duodenum 1806
 intestinal 1888
 of rectum 1912
 of stomach 1806
 (Fig.) 1813
- Polypectomy in chronic hypertrophic rhinitis, 2131**
 indications for 2295
- Polypbagn, diff diag (Table)** 1776
- Polypnea, diff diag (Table)** 2016
- Polypsis of colon, 1865**
 (Fig.) 1867
- Polysaccharides** 588
 in mucococcal immunization by 207
- Polyserum 1934**
 in pericarditis 1011
- Polyuria, in diabetes insipida, 1181**
 diff diag (Table) 2231
 in hyperparathyroidism, 1927
- Polyvalent antiseptic agents, 87**
- Ponoc 634** See also *Leishmanians*
- P. ns varoli, function, 1293**
- Pontine reaction pattern, 1427**
- Pontocaine 3215**
 in respiratory disturbances 2029
- Porad nite 471**
- Porencephaly 1407**
- Porphyria, in epidermolysis bullosa, 5151**
 in hydroa, 5176
- Portal carcinoma, 1969**
 hep. t.c. insufficiency in, 1270
- Portal cirrhosis, treatment, 1971**
 diet in, 1971
 diuresis in 1971
 vitamins in, 1971
- Hypertension, 1968**
 edema in 710
 obstruction, edema in, 710
 system (Fig.) 5578
 vein, chronic occlusion, 1960
 thrombosis 1962
- Port wine stain, 5202**
- Posada Werner's disease 429** See also *Coccidioidomycosis*
- Postabortal endometritis 2606**
 (Fig.) 2607
- Postcholecystectomy syndrome 1992**
- Postfebrile alopecia, 5445**
 diff diag (Table) 512
- Postganglionic sympathectomy in Raynaud's disease, 1002**
- Postinfectious encephalitis, 442**
 diff diag (Table) 442
- Postmenopausal bleeding, 2227**
 ovarian tumors and, 2575
- Postmortem tubercle 5259**
- Postneumatic leukoderma, 5404**
- Postoperative care in colonic surgery 1837**
 in gallbladder surgery 1991
 in gastric surgery 1460
 in prostatectomy 2419
 in small bowel surgery 1833
 in thoracic surgery 2040
 in thyroidectomy 1215
 complications, prevention, 4005
 pulmonary manifestations (Table) 4016
 treatment (Table) 4016
 treatment, 4004, 4018
 list, 4007
 discomfort prevention, list, 4005
 fever 4007
 pneumonitis, 2199
 pulmonary collapse manifestations 2051
 tetany after thyroidectomy 1216
- Postpartum care 2716**
 in cardiac disease 2675
 exercise, 2719
 hemorrhage 2717
 psychoses 2720
- Postrenal albuminuria diff diag (Table) 2371**
- Posttransfusion hemoglobinemia, diff diag (Table) 1074**
- Posttraumatic disturbances of head injuries, 1455**
- Posture 3492**
 correction in osteo-arthritis 2865
 disease and 3027
 disturbances definitions 1310
 evolution 3054
 exercises for 357
 faulty visceral signs, 2058
 (Fig.) 306
 sitting 3493
 sleeping and sitting (Fig.) 2193
 standing 3492
 and walking (Fig.) 3492
 strains, 3054
 pain in, diff diag (Table) 2040
- Postvaccinal encephalitis, 445**
 responses 451
- Potain aspiration of p. ura. fund, 2030**

- Potassium** 599
 absorption 599
 antimony tartrate 539
 in leishmaniasis 535 5319
 arsenite solution 125
 bismuth tartrate dosage (Table) 128
 chlorate prescription 1693
 chloride dosage 3823
 in periodic paralysis 1416
 decrease in blood diff diag (Table) 751
 distribution 599
 effect on muscle 3888
 excretion 599
 high low sodium diet in Cushing's syn-
 drome 1164
 increase in blood diff diag (Table) 731
 inhibition heart function and 776
 iodide patch test in dermatitis herpetiformis
 3372
 in Ménière's disease 1487
 metabolism 599
 disturbances 730
 nitrate as anaphrodisiac evaluation 389,
 permanganate as oxidizing agent 3185
 soaks in psoriasis 5401
 pharmacology 600
 poisoning 601
 salts dosage 2359
 in serum (Table) 5
 and sodium tartrate cathartic 1830
 sources 599
 therapeutics 600 3823
 toxicity 601
Pott's disease See *Tuberculosis of spine*
 fracture 8018
 (Fig) 2090 2048 2019
 reduction 3048
 treatment (Table) 3030
Pouqueten ditch (Fig) 2093
Pautice 3790
Poultry composition (Table) 610
 food elements in 642
Powder sulfonamide soluble 98
 uses 5137
Powdered milk in infant feeding 2754
P R interval abnormal analysis (Table) 808
 normal analysis (Table) 806
Practice private establishing 4023,
 economics of 4039
Practitioner community and 4037
 establishment of office 4010
 hospital and 4038
 medical profession and 4
 per oral problems of 4010
Prairie age geographic distribution (Fig)
 560
Fraunholz Küstner test technic 539
Pre-anesthetic medication list 5913
Precancerous 571
Precancerous dermatoses 3499
Precipitin, definition 145
 test on cerebro spinal fluid 3753
 collection of blood for 56
Precipitinogen, definition 145
Precordial bulge in pericarditis 1009
 dulness diff diag (Table) 3539
 murmur description (Table) 3973
 oppression in backward failure 343
 pain diff diag (Table) 899
 electrocardiogram in (Fig) 814 815
Preganglionic sympathectomy in Raynaud's
 disease 1000
Pregnancy 2617
 abdominal 2660
 pain in diff diag (Table) 2662
 wall in 2625
 Addison's disease and 2675
 alcohol in 2632
 anemia in 1083
 diff diag (Table) 1089
 hypochromic of 1088 2645
 macrocytic hyperchromic of 2646
 physiological 1088
 appendicitis in 1884 2649
 backward failure and 248
 blood chemical changes in 2027
 count in 1052
 body weight in 2607
 breasts in 2603
 cardiac disease and 2671
 in cardiac invalid 884
 complications of 865
 contraindications to 864
 cell 2625
 complications 2636
 constipation in 2633
 corpus luteum of 2489 2606
 dermatitis herpetiformis of (Fig) 3941
 dermatoses in 2643
 diabetes and 1200
 insipidus and 1183
 mellitus and 2679
 diet in 687 2629
 dietary requirements 2632
 differentiation from ovarian tumors 2577
 drugs in 2632
 early diagnosis 2617
 physical signs 2620
 ectopic, 2657
 pain in left lower quadrant diff diag
 (Table) 1806
 right lower quadrant diff diag (Table)
 1880
 edema in diff diag (Table) 717
 endocrine glands in 2625
 endocrinopathies and 2675
 erythroblastosis foetalis and, 1071
 estimation of confinement 2655
 exercise in 2633
 extra uterine 2657
 fetus in, progress (Table) 2630
 fever in diff diag (Table) 2642
 gallstones and 2676
 gingivitis in (Fig) 1675
 goner and 2674
 iodide in, 811
 gonorrhea and 2670
 hematopoietic system in 2623
 hormone assays in 2626
 hygiene of 2623
 hyperparathyroidism and 2674
 hypercalcemia in diff diag (Table)
 725
 hypothyroidism and 2674
 insomnia in diff diag (Table) 1305
 low back pain in 2617
 mental disorders and 1985
 neurologic disturbances 2617
 normal pain in left lower quadrant diff diag
 (Table) 1866

- Pregnancy normal, pain in right lower quadrant, diff diag (Table) 1860
 variations in blood during 1041
 obesity in, 636
 oral hygiene in, 1633
 manifestations 1674
 (Fig) 1675
 orthopedic complications, 2647
 ovarian, 2660
 pelvic deformity and, 2354
 pernicious vomiting of 2637
 hepatitis complicating 1965
 pigmentary changes in, 261
 positive Benedict test in, diff diag (Table) 3676
 progress of 2630
 pyelitis, 2353 2614
 (Fig) 2354
 rheumatic fever and, 199
 rheumatoid arthritis and, 2675 2921
 sexual intercourse in 2635
 signs (Table) 2630
 Simmonds disease and 1174
 skin in, 3140
 slipping rib in, 2645
 surgery in, 3099
 symptoms (Table) 2630
 syphilis and, 2671
 treatment, 2, 0
 tests, 2426 2619
 frog (Fig) 2619
 positive in hydatidiform mole 2655
 (Table) 2630
 tobacco in, 2632
 toxemia 2633
 diff diag (Table) 910
 edema in, 714
 essential hypertension in (Table) 905 2639
 ophthalmic manifestations in, 1599
 shock in 236
 termination of pregnancy in, 2643
 uric acid level in, diff diag (Table) 737
 tubal, 2657 See also *Tubal pregnancy*
 tuberculosis and, 2671
 type diet in, 1052
 urinary infection in, prevention, 2644
 sepsis of 2644
 uterus in (Table) 2630
 vaginal bleeding in, diff diag (Table) 256
 2664
 vaginitis, 2647
 valvular defects and, 975
 vitamin B in dosage 1113
 vomiting in, 2637
 Pregnenolol in pregnancy 2626
 Pregnenolone 2518
 Premature alopecia, 3444
 treatment, 3444
 contractions 887
 mission, 2402
 Prematurity 2763
 care in, 2765
 fontanelles in, diff diag (Table) 2709
 physiologic landmarks of 2764
 Prenatal care, 2628
 for pregnant cardiac, 26 2
 syphilis, skin lesions, 3257
 Preoperative care in biliary tract surgery 1990
 in colon surgery 1834
 in gallbladder surgery 1990
 Preoperative care in prostatectomy 2442
 in shock prevention, 237
 in small bowel surgery 1823
 investigations, list, 4001
 medication, 3913
 preparation, 4001 400
 Prepatellar bursitis, 2703
 Prephthical tuberculosis, diagnosis, 261
 Prepubertal bleeding diff diag (Table) 2479
 growth, female 2478
 Prepuce calculi, 2477
 dorsal slit, technic, 2927
 in newborn, care 2749
 Prerenal albuminuria, diff diag (Table) 3670
 Preretinal hemorrhage 1639
 Presbyopia 1337
 Pre-school age emotional, and mental growth
 in 277
 Prescription, 3502
 parts of 3504
 Presenile sclerosis, 953
 Presey C test, 13 6
 Pressure intracranial, increased in brain tumors
 14.1
 due to pineal tumors, 1185
 symptoms, 1421
 intra-ocular normal, 15 6
 variations in, 15 6
 venous, determination, 783
 Prnatum, 2411
 definition, 1, 04
 in leukemia, 1109
 of nervous origin, 2433
 Prickle-cell epithelioma, 3223
 (Fig) 3220
 Prickly heat, 3171
 Primary case, definition, 61
 Prisms, in eyeglasses, 1337
 Prisms in infancy dosage 2746
 in respiratory disturbances, 2023
 therapeutics, 357 3533
 Probacil, 191
 Procaine, 3915
 block in arterial occlusion, 999
 injections, in analves c block 2808
 in back sprain, 3063
 in fibromyositis, 2900
 in fracture (Table) 2965
 in humeral ep condylitis 2963
 technic, 2814 2904
 Proctitis 1914
 Proctodysia, 1820
 Proctoscopy 1907
 Progenic facies diff diag (Table) 3509
 Progesterone 2017
 in abruptio placentae 2667
 deficiency 257
 in functional bleeding 2519
 in habitual abortion, 2519 2654
 in threatened abortion, 2518 2653
 Pr gestin, 2519
 therapeutics, 3506
 Prognosis 4023
 factors, economic, 4026
 influencing 4023
 fatal, 4030
 favorable, 4029
 therapeutic value of 4032
 guarded, 4030
 life insurance and, 4028

- Prognosis statistics and 4027
 Proliferative arthritis 2310
 Promin in coccidioidomycosis 502
 hemolytic anemia from 25
 in leprosy 277
 in tuberculosis 267
 Promizole in hyperthyroidism evaluation 1212
 in tuberculosis 267
 Prone pressure method 3767
 (Figs) 3767
 Propadrine hydrochloride in infancy 2743
 therapeutics 3377 3383
 Propeller fracture 2083
 Proprietaries 3800
 Proptosis 1573
 diff diag (Table) 1573
 measurement 1316
 Propulsion gait 1506
 Propylthio uracil in angina pectoris 891
 in hyperthyroidism 1212
 Prostate gland anatomy 2309 2308
 anomalies 2196
 calculi 2196 (Fig) 2197
 hypertrophy benign 2143
 diet in 2143
 surgery in 2143
 diagnosis 2447
 (Fig) 2448
 malignant phosphatase activity 2450
 treatment 2150
 massage evaluation 2263
 syphilis 2473
 tuberculosis 2172
 Prostatectomy indications for 3091
 in prostatic hypertrophy 2148
 Prostatitis acute 2170
 chronic 2171
 Prostatovenectomy 2150
 Prosthesis dental 1660
 Prostigmine prophylactic injection in lobar
 pneumonia 2183
 Protamine zinc insulin 1290
 Protargol in skin diseases 3127
 Protectives in gastritis prescription 1810
 for intestine and colon 1676
 Protein 501
 absorption 692
 in blood decrease 706
 increase diff diag (Table) 733
 digestion of 692
 foreign therapy 1552
 in rheumatoid arthritis 2021
 in grain 614
 high diet 674
 arterio sclerosis and 278
 in celiac disease 1938
 in Cushing's syndrome 1164
 in glomerulonephritis nephrotic phase
 2386
 in nontropical sprue 1930
 in tuberculosis 260
 in low salt diet 675
 low diet in glomerulonephritis 2378
 high carbohydrate diet 673
 metabolism 621
 disturbances of 732
 milk 634 636
 requirement 691
 normal 591 600
 silver dosage (Table) 135
 Protein silver sources 502
 structure 591
 uses (Table) 135
 Proteus vulgaris Bence-Jones 3678
 nephrotic syndrome in 706
 Proteus vulgaris streptomycin in 111
 Prothrombin 1109
 in blood clotting 1109
 deficiency 1113
 test for 630
 time 1950
 normal values (Table) 3693
 Protozoa causing disease 40
 infections 506
 chills in (Table) 32
 diff diag (Table) 3219
 fever in (Table) 26
 penicillin in evaluation 111
 streptomycin in evaluation 111
 sulfonamides in evaluation 93
 intestinal cysts (Table) 3733
 trophozoites characteristics (Table) 3733
 Prurigo 2343
 diff diag (Table) 3346 3370
 in infancy diff diag (Table) 3147
 Pruritus and allergen in 553
 cinabarb in 3122
 diff diag (Table) 1916
 (Fig) 1908
 in azotemia 2778
 bathing and 3134
 generalized diff diag (Table) 3170
 hematoma 3171
 diff diag (Table) 3215
 localized diff diag (Table) 3178
 pigmentation in diff diag (Table) 3133
 sodium bicarbonate in 3127
 vulvae diff diag (Table) 2504
 esthrono ointment in 3119
 Psammoma 1470
 Pseudo-achromia 3300
 Pseudocirrhosis in pericarditis 1011
 Pseudofever 3300
 Pseudohemophilia 1117
 Pseudohemaphysalium 1269
 female 2531
 male 2531
 Pseudomonas aeruginosa 329
 streptomycin in evaluation 111
 Pseudoneuritis 1584
 Pseudopyrexia 23
 Pseudorubella 419 See also Sixth disease
 Psoriasis 1934
 Psittacosis 473
 quarantine data on (Table) 67
 serologic test in (Table) 60
 Psoriasis apasm agnus 3571
 Psoriasisiform syphiloderma 3 35
 Psoriasis 3414
 arsenic in 126
 diff diag (Table) 175 412 3254 3369 3379
 (Fig) 3416
 nail lesions in 3453
 (Fig) 3453
 of nails 3417
 ophthalmic manifestations 1506
 of penis 2158
 pigmentation in diff diag (Table) 3150
 prescriptions for 3119
 rash in diff diag (Table) 3283

- Psoriasis of scalp** 3416
 types of 3416
 vulgaris, 3414
 of vulva 2594
 yellow oxide of mercury in 3121
Psoriatic erythroderma, 3416
Psychiatric disturbances of infancy list 27-9
Psychiatrist 1324
 indications for consultation 3635
Psychiatry 1283
 definition, 1283
 misconceptions concerning, 1284
 practitioner and, 1284
Psychoanalysis, 1295
 in alcohol psychoses, 1395
 concept of neuroses 1337
 terminology 1337
Psychogenic arrhythmias, 8-3
 disturbances coma in diff diag (Table)
 1294
 constipation in diff diag (Table) 18-3
 incidence 1283
 incontinence of feces in, diff diag (Table)
 1015
 pain on swallowing in diff diag (Table)
 1-22
 unconsciousness in diff diag (Table) 1294
Psychometric tests, 132-3
 in infancy indications 2-37
Psychomotor activity 1309
Psychoses 1364
 alcoholic 1384
 Alzheimer 1381
 brain tumors and, 142
 cardiac in backward failure 945
 combat, 1375
 definition 1315
 differentiation from neurosis (Table) 1315
 due to
 bromide 1383
 drugs 13-3
 gases, 13-3
 heavy metals 1383
 sulfa drugs 13-6
 encephalitic 1381
 epilepsy and 1387
 febrile, 13-6
 in hyperchromic anemia 1386
 idiopathic definition 1315
 differentiated from symptomatic (Table)
 1365
 diff diag (Table) 1366
 insomnia in, diff diag (Table) 1305
 involutional 1372
 diff diag (Table) 1366
 after meningitis, 1381
 metabolic conditions and, 1383
 in multiple sclerosis 1386
 in neoplastic disease 1381
 lack, 1381
 postapopleptic 1382
 postoperative treatment 4018
 postpartum, 2-20
 pregnancy and, 2-17
 presenile 1381
 senile 1382
 amnesia in diff diag (Table) 1308
 surgery and, 4000
 symptomatic definition, 1315
 differentiated from idiopathic (Table) 1365
Psychoses symptomatic, diff diag (Table)
 1374
 syphilitic, 1377
 traumatic 137-3
 tumors causing diff diag (Table) 137-4
 in typhoid fever 235
Psychosomatic affection 15 1343
 disorders, intestinal, 1844
 in neuroses 1315
 list of 1344
 in rheumatoid arthritis 2911
 of skin 3231
Psychotherapy 1316
 in all ages 565
 in alopecia areata, 3447
 in back-arch failure 946
 in congenital heart disease 9-3
 in coronary occlusion 990
 formal 1327
 in hypertension, 912
 in hypertrichosis, 3439
 in inoperable carcinoma 5-8
 in obesity 697
 practitioner and, 1316
 psychiatrist and 1324
 in rheumatic fever 198
 in rheumatoid arthritis 2918
 in shock prevention, 937
 in tuberculosis 271
 in valvular defect, 975
 in weight loss 701
Psyllium seeds 1376
Potamine poisoning 18-9
Ptoxis diff diag (Table) 1649
 etiology (Table) 1569
 (Fig) 156-3
 operation 1557
 symptoms (Table) 1569
Ptyalin in digestion 593
Ptyalism diff diag (Table) 1 09
Pubertas praecox 2418
 diff diag (Table) 2450
 in female 2527
 (Fig) 1185
Puberty female 2479
 male 2393
Public health control in infection 6
 measures in infectious diseases, 64
Puerperal endometritis 2602
 infection, 2603
 prophylaxis 260-3
 treatment, 2606
 penicillin in, 2606
 sepsis, 2602
 treatment 2606
Puerperium 2715
 care of bladder 2719
 complications, 2-20
 hygiene, 2716
Pulex irritans 3189
Pulmonary See also *Lung*
 abscess, 2214
 actinomycosis 491
 air distribution 2014
 amebiasis diff diag (Table) 40
 arteritis 1027
 artery dilatation, cause (Table) 969
 manifestations (Table) 269
 sclerosis right heart failure from 912
 aspergillous 498

- Prognosis statistics and 4027
 Proliferative arthritis 2910
 Protein in coccidioidomycosis 502
 hemolytic anemia from 90
 in leprosy 277
 in tuberculosis 267
 Protizole in hyperthyroidism evaluation 1212
 in tuberculosis 267
 Prone pressure method 3767
 (Figs) 3767
 Propadrine hydrochloride in infancy 2743
 therapeutics 3877 3883
 Propeller fracture 2063
 Proprietaries 3800
 Proptosis, 1575
 diff diag (Table) 1575
 measurement 1546
 Propulsion gast 1506
 Propylthio-uracil in angina pectoris 894
 in hyperthyroidism 1212
 Prostate gland anatomy 3394 3638
 anomalies 2196
 calculi 2130 (Fig) 2137
 hypertrophy benign 2115
 diet in 2448
 surgery in 2448
 diagnosis 2447
 (Fig) 2446
 malignant phosphatase activity 2450
 treatment 2450
 massage evaluation 2063
 syphilis 2478
 tuberculosis 2472
 Prostatectomy indications for 3001
 in prostatic hypertrophy 2448
 Prostatitis acute 2470
 chronic 2471
 Prostatovesiculectomy 2100
 Prosthesis dental 1666
 Prostaglandin prophylactic injection in lobar
 pneumonia 2183
 Protamine zinc insulin 1239
 Protargol in skin diseases 3127
 Protectives in gastritis prescription 1810
 for intestine and colon 1876
 Protein 591
 absorption 592
 in blood decrease 706
 increase diff diag (Table) 735
 digestion of 593
 foreign therapy 1532
 in rheumatoid arthritis 2621
 in grain 645
 high diet 674
 arteriosclerosis and 678
 in celiac disease 1933
 in Cushing's syndrome 1163
 in glomerulonephritis nephrotic phase
 2386
 in nontropical sprue 1930
 in tuberculosis 469
 in low salt diet 675
 low diet in glomerulonephritis 2378
 high-carbohydrate diet 673
 Metabolism 591
 disturbances of 735
 Milk 634 636
 requirement 591
 normal 631 660
 silver dosage (Table) 135
 Protein silver sources 502
 structure 591
 uses (Table) 135
 Proteinuria Bence-Jones 3673
 nephrotic syndrome in 706
 Proteus vulgaris streptomycin in 111
 Prothrombin 1109
 in blood clotting 1109
 deficiency 1113
 test for 630
 time 1950
 normal values (Table) 3693
 Protozoa causing disease 40
 infections 506
 chills in (Table) 311
 diff diag (Table) 3210
 fever in (Table) 26
 penicillin in evaluation 111
 streptomycin in, evaluation 111
 sulfonamides in evaluation 30
 intestinal cysts (Table) 3788
 trophozoites characteristics (Table) 3733
 Frugivorous 3345
 diff diag (Table) 3346 3373
 in infancy diff diag (Table) 3147
 Pruritus an allergen in 233
 cinchona in 3122
 diff diag (Table) 1916
 (Fig) 1903
 in azotemia 2778
 bathing and 3134
 generalized diff diag (Table) 3170
 hiemalis 3171
 diff diag (Table) 3018
 localized diff diag (Table) 3178
 pigmentation in diff diag (Table) 3133
 sodium bicarbonate in 3127
 vulvae diff diag (Table) 3504
 estrone ointment in 3110
 Psammoma, 1420
 Pseudo-achromia 3300
 Pseudocystitis in pericarditis 1011
 Pseudo-fever 23
 Pseudo-hemophilia 1117
 Pseudohermaphroditism 1269
 female 2531
 male 2531
 Pseudomonas aeruginosa 309
 streptomycin in evaluation 111
 Pseudoneuritis 1584
 Pseudopyrexia 23
 Pseudorubella 410 See also Strik disease
 Psoriasis 1938
 Psittacosis 473
 quarantine data on (Table) 67
 serologic test in (Table) 60
 Psos spasm signs 3571
 Psoriasisiform syphiloderma 3095
 Psoriasis 3114
 arsenic in 126
 diff diag (Table) 175 412 3734 3360 3379
 (Fig) 3416
 nail lesions in 3455
 (Fig) 3453
 of nails 3427
 ophthalmic manifestations 1566
 of penis 2459
 pigmentation in diff diag (Table) 3150
 prescriptions for 3119
 rash in diff diag (Table) 4282

- P wave abnormal analysis of (Table) 806
 description 804
 normal analysis (Table) 806
 Pyarthrosis joint motility in diff diag (Table) 9311
 Pyemic body type characteristics 3491
 Pyelitis, 2353
 of pregnancy 2644
 urogram (Fig) 2354
 Pyelograms normal (Fig) 2249 2250
 Pyelography retrograde 2251
 Pyelolithotomy indication for 3993
 Pyelonephritis acute 2353
 chemotherapy in 2355
 chronic, 23.6 (Fig) 2337
 diagnosis, 2357
 of pregnancy 2644
 Pyelorenal backflow 2270
 Pyelovenous backflow (Fig) 2318
 Pyemia, definition 43
 Pylephlebitis cryptogenic, 1961
 suppurative, 1961
 Pyloric obstruction, 1789
 electrocardiogram in (Fig) 835
 electrocardiographic changes in 808
 surgical treatment 1793
 stenosis congenital 1797 (Fig) 1798
 abdominal pain and diff diag (Table) 2 30
 in infancy peristaltic waves in (Fig) 2735
 Pyloroplasty 1759
 indications for 3995
 Pylorospasm definition 1769
 Pyocoele in chronic paranasal sinusitis 2185
 of testis 2431
 Pyocyanase (Table) 103
 Pyocyanous infection, 328
 streptomycin in, 328
 Pyocyanine (Table) 103
 Pyoderma 3248
 diff diag (Table) 3250 3298
 pediculosis (Fig) 3183
 systemic treatment, 3256
 treatment 3256
 tyrothricin in 106
 Pyogenic infection diff diag (Table) 192
 in vaccination, 452
 meningitis torulosa vs 498
 osteomyelitis, 2930
 Pyonephrosis 2271
 Propneumothorax 2085
 in putrid empy ma 2223
 Pyorrhea alveolaris 1700
 (Fig) 1709
 Pyramidon, evaluation 3833
 in infancy dosage 2743
 Pyrethrum in scabies 3125
 Pyrexia, 22. See also *Fever*
 absolute 3485
 circulatory signs in diff diag (Table) 1006
 of doubtful origin diff diag (Table) 26
 infectious diff diag (Table) 30
 intrathoracic disorders with diff diag (Table) 404
 of metabolic origin diff diag (Table) 718
 relapsing diff diag 3485
 relative 3485
 Pyribenzamine 565
 in drug eruption, 3341
 Pyridoxine 677 2633
 Pyridine dosage (Table, 1042
 in polycythemia 1094
 Pyrogallic acid in lupus vulgaris 3265
 Pyrogallol in skin diseases 3125
 Pyrogen temperature rise due to 24
 Pyro in definition 1789
 Pyuria, diff diag (Table) 2352

Q
 Q fever 382
 annual injection in (Table) 62
 culture in (Table) 54
 serologic test in (Table) 60
 QRS complex normal analysis (Table) 806
 wave description 804
 QT interval analysis (Table) 807
 Quartan malaria 513
 Quarts light therapy 3797
 in miltum 3495
 Quackenstedt test 3735
 in spinal cord tumors 1484
 Quellung of pneumococci 201
 (Fig) 202
 Queyrat's erythroplasia 3331
 Quickening 26 3
 Quinacrine in malaria 590 52
 Quinidine 861
 in circulatory disturbances 861
 in congestive failure 950
 effects on heart 772 862 8884
 sulfate 861
 in coronary occlusion 887
 electrocardiographic changes due to 809
 in infancy dosage 2744
 therapeutics 862
 toxicity 862
 in vagal stimulation 883
 Quinine 516
 antimalarial action 517
 for induction of labor dosage 2511
 in myotonia congenita 2586
 ophthalmic manifestations due to 1597
 pharmacology 516
 in photosensitivity 3125
 poisoning treatment 518
 skin reactions caused by 3340
 therapeutics 517
 Quinolone in malaria 521
 Quinolone compound ointment in acne variciformis 3357
 Quinsy 2155

R
 Rabies 439
 animal injection (Table) 62
 diff diag (Table) 442
 incubation period 439
 prevention 440
 quarantine data on (Table) 67
 vaccine 78 440
 treatment neurological complications 446
 Rachitis 2350
 Racial immunity 76
 Radial nerve injuries motor signs in (Table) 1440
 Radiant energy malignancy and 3213
 physiotherapy by 3793
 (Table) 3 244
 Radiation sickness 3798
 oral manifestations, 1678

- Pulmonary atelectasis** 2052
 atresia 960
 carcinoma 2078
 coccidioidomycosis 499
 (Fig) 500
 collapse 2053
 differentiation from pleural effusion 2055
 differentiation from postoperative em-
 bolization 2055
 differentiation from postoperative pneu-
 monitis 2055
 prevention 2055
 treatment 2055
 complications postoperative 4017
 signs (Table) 4016
 treatment (Table) 4018
 congestion in backward failure 943
 hypostatic 2086
 disease circulatory disturbances in (Table)
 955
 edema 711
 electrocardiographic changes in 808
 (Fig) 819
 electrocardiographic diagnosis 810
 use of sugars in 591
 embolism 2086
 diff diag 2089
 (Fig) 2087
 pathology 2088
 emphysema 2056
 (Fig) 2057
 fibrosis cardiac contour in (Fig) 794
 right heart failure from 942
 furunculosis 2212
 helminthiasis 2213
 diff diag (Table) 405
 hypertension 919
 infarction See *Pulmonary embolism*
 insufficiency 960
 blood pressure in (Table) 971
 cause (Table) 971
 electrocardiogram in (Table) 971
 manifestations (Table) 971
 prognosis (Table) 974
 monilia 208
 mycoses diff diag (Table) 405
 osteo arthropathy See *Clubbed fingers*
 spirochetosis diff diag (Table) 405
 stasis prevention 4005
 stenosis blood pressure in (Table) 971
 cause (Table) 971
 clinical manifestations (Table) 961 971
 diff diag (Table) 868
 electrocardiogram (Table) 971
 isolated 961
 prognosis (Table) 974
 tuberculosis 252
 (Fig) 4027
Pulmonic murmur description (Table) 973
Pulmotor 3767
 in asphyxia 270
Pulpitis 1704
 Pulsation reversal of 796
Pulse abnormalities of diff diag (Table) 3580
 bounding diff diag (Table) 5590
 pressure decreased diff diag (Table) 918
 in hypertension 905
 increased diff diag (Table) 918
 normal 3437
 in peripheral vascular disease (Table) 926
Pulse pressure in rheumatic myocarditis 1014
 rate basal metabolic rate and 3486
 of infants (Table) 2727
 normal 3485
 slow in brain tumors 1428
 variations in 3485
 tracings (Fig) 783
 venous 784
 time relation in (Fig) 775
Pulsus alternans diff diag (Table) 3581
 in tsutsugamushi fever 382
 bigemini 860
 paradoxical diff diag (Table) 3381
 in pericarditis 1009
Punctum definition 3104
Puncture abdominal technique 1823
 external technic 3783
 (Fig) 3983
 in neoplasms 375
 spinal 3781
 (Fig) 3761 3782
 ventricular technic 3783
 Punctured wound treatment, 3988
Pupil abnormalities of diff diag (Table) 1534
 Argyll Robertson diff diag (Table) 1534
 diameter abnormalities diff diag (Table)
 1535
 normal 1532
 irregular diff diag (Table) 1534
 physiology 1532
 reaction 1533
 examination 3623
 myotonic, diff diag (Table) 1534
 of pharmacology 1531
 reflexes 1534
 in shock 931
 springing diff diag (Table) 1534
Purine content of foods 2676
 (Table) 676
 diet low in 677
 in gout 2675
 metabolism 593
Purkinje's phenomenon 1632
Purpura 3423
 allergen in 653
 allergic 1121
 anaphylactoid 1121
 definition 3104
 due to drugs 3339
 hemorrhagic, 3425
 idiopathic thrombocytopenic diff diag
 (Table) 3398
 in infancy diff diag (Table) 3147
 oral diff diag (Table) 1568
 in pertussis 282
 rheumatica (Fig) 1122
 surgical treatment 1795
 simplex 3424
 (Fig) 3425
 thrombocytopenic See *Thrombocytopenia*
 essential
Puru puru, 353
Pus cells in urine 3634
Pustular acne (Fig) 3359
 dermatoses diff diag (Table) 3351
 folliculitis diff diag (Table) 3269 3351
 of beard diff diag (Table) 3137
 syphiloderma 3285
Pustule diff diag (Table) 422
 malignant 222

- Red blood cell disturbances 1033
 (Fig) 1038
 fragility normal value (Table) 1016
 test 3706
 normal appearance 3699
 physiology 1038
 in urine 3693
 marrow count 1042
 sulfide of mercuric antiseptic 3129
- Reduction in Colles fracture 3031
 (Fig) 3031
 of dislocated shoulder heel in axilla method 2973
 Kocher maneuver in 2973
 (Fig) 2973
 of dislocations anesthesia in 2965
 of fracture closed 2933
 open, 2933
 (Table) 2935
 of temporomandibular joint 2966
- References selected list 4109
- Referred pain, 1477
- Reflex(es) abdominal superficial 3033
 Babinski (Table) 3394
 Chaddock (Table) 3584
 cremasteric 3555
 examination (Table) 3584
 eyelid abnormal diff diag (Table) 1534
 Gordon (Table) 3584
 Oppenheim (Table) 3584
 patellar (Table) 3584
 plantar (Table) 3584
 vasomotor 1417
- Refraction, 1535
 disturias 156
- Refrigeration therapy See *Crym therapy*
- Regeneration of cell 10
- Regurgitation definition 171
- Rehabilitation and convalescent care 4117
- Reihen test meal 33
 tube 1750
- Reichman disease definition 1769
- Reinfection tuberculosis 257
- Reiter's disease 484
- Rjuvenation diff diag (Table) 2480
- Relapsing fever 337
 diagnosis 360
 by smear (Table) 51
 diff diag (Table) 23
 (Fig) 358
 louse as vector in (Table) 4
 ocular manifestations 1005
 prognosis 359
 serologic test in (Table) 33
 temperature curve in 45
 tick as vector in (Table) 42
 treatment 360
- Renal abscess 2359
 agenesis, 2357
 albuminuria, diff diag (Table) 2371
 amyloidosis 236
 artery aneurysm 330
 anomalies, 2396
 embolization 2329
 occlusion, 2329
 sculi 2314
 in hyperparathyroidism 127
 (Fig) 128
 calcic anatomy 2345
 anomalies, 2384
- Renal carcinoma 2339
 circulation, 2329
 (Fig) 2329
 colic 2315
 drugs in, 2370
 in echinococcus cyst of bladder 232
 morphine prescription for 3306
 diabetes, 1262
 disturbances See also *Nephropathies*
 dyspepsia in diff diag (Table) 1771
 dysuria in diff diag (Table) 2325
 hematuria in, diff diag (Table) 2307
 low back pain in, diff diag (Table) 3072
 lumbar pain in, diff diag (Table) 215
 pyuria in diff diag (Table) 230
 swellings in, diff diag (Table) 1886
 dwarfism, 1223
 diff diag (Table) 2579
 ectopia 2133
 (Fig) 2293
 function impairment in chronic glomerulonephritis 2394
 phenolsulphonphthalic excretion and 3689
 tests 3687
 concentration 3687
 dilution 3687
 phenolsulphthalein, 3688
 pitressin in, 1179
 in toxemia of pregnancy 2641
 in urinary lithiasis 2516
 urinary tests for 3637
 glycosuria, diff diag (Table) 3616
 in plumbism, 763
 infarcts 2330
 infections 2362
 injuries 2300
 diagnosis 2303
 (Fig) 2309
 treatment, 2309
 insufficiency 2275
 compensated 2277
 decompensated 2278 See also *Anaemia*
 hemogram in, 230
 hyperchloremia in diff diag (Table) 732
 hyperphosphatemia in diff diag (Table) 727
 hypokalemia in diff diag (Table) 731
 hyperuremia in diff diag (Table) 731
 hypochloremia in, diff diag (Table) 732
 hyponatremia in, diff diag (Table) 729
 ossification disturbances in diff diag (Table) 299
 prophylaxis 2281
 treatment 232
 in chemia, 2273
 hypertension and Goldblatt experiment in, 2273
 occurrence 2277
 mobility factors in 294
 parathyroid atrophy 2270
 pelvis anatomy 2315
 anomalies 2394
 capacity 2350 3637
 tumors 2326
 polycystic disease 2291
 rock in 1223
 tuberculosis 2347
 diagnosis 2350
 tubule diagram (Fig) 2308
 tumors 2346

- Radiation therapy See *Radiotherapy*
- Radioactive metal poisoning clinical manifestations (Table) 758
 diagnosis (Table) 758
 occupations susceptible to (Table) 758
 treatment (Table) 758
 phosphorus 605 822
 in leukemia 1106
 in polycythemia 1095
- Radiodermatitis acute 3177
 alopecia in 3119
 alopecia caused by diff dmg (Table) 3439
 of breast (Fig) 3160
 chronic 3177
 diff diag (Table) 3163 3219 3298 3383
 of face (Fig) 3160
 (Fig) 3796
 nails in 3436
 pigmentation in diff diag (Table) 3156
- Radiographs developing of 3742
- Radiography in renal tuberculosis 2350
 technic 3741
 of urinary tract 2250
- Radiohumeral joint dislocation 2976
 treatment (Table) 2971
- Radiosensitivity 3707
- Radiotherapist 3893
- Radiotherapy 3796
 in carcinoma 377 3126
 in cavernous angiomas 3202
 in diabetes insipidus 3181
 in gynecology 2321
 indications for 3797
 in lymphosarcoma 1128
 patient management in 3798
 in psoriasis, 3421
 sickness after 3798
 technic 3797
- Radiotransparency of bone diff diag 2805
 (Table) 2806
- Radium implantation in carcinoma of prostate 2456
 in nasal tumors 2068
 (Fig) 3009
 injuries due to 3177
- Radius of dog epiphyseal end (Fig) 2796
 fracture 3027
 lines (Fig) 3026
 treatment (Table) 3014
 head subluxation of treatment (Table) 3071
 partial absence deformity in diff diag (Table) 2951
 shaft fracture treatment (Table) 3015
- Rales diff diag (Table) 3549
 method of eliciting 3513
 types 3541
- Rashes See also *Eruptions*
 in chickenpox (Fig) 4 1
 in eruptive fevers diff diag (Table) 172
 erythematous generalized diff diag (Table) 180
 in German measles (Fig) 417
 in measles (Fig) 411
 in meningitis (Fig) 212
 pustular diff diag (Table) 422
 in rubella (Fig) 417
 scarlatiniform diff diag (Table) 180
 (Fig) 417
 of typhus fever (Fig) 370
- Rashes vesicular diff diag (Table) 422
 yaws (Fig) 8, 2
- Rat bites treatment 3069
 extermination endemic typhus and 376
 acute dermatitis 3195
- Rat bite fever 363 See also *Flareshill fever*
 animal injection in (Table) 69
 cutaneous manifestations (Table) 3246
 diff diag (Table) 29 172 174 419 3219 3768
 manifestations 3246
 methods of diagnosis (Table) 3246
 rash in diff diag (Table) 2768
 serologic test in (Table) 60
 symptoms other than rash in diff diag (Table) 2790
- Ray fungus 490
- Raynaud's disease 1099
 diff diag (Table) 936
- Raynaud like syndrome in scleroderma, 3427
- Rays Grenz 1519
- Reaction(s) See also *Tests and specific names of reactions*
 intravenous injections causing 3774
 patterns in brain tumors 1423
 in electro-encephalograms 1401
 of injuries to peripheral nerves (Table) 1476 1477
 picture 14 1899
 serum See *Serum reactions*
- Realignment 2988
- Rebound tenderness 3255
 in peritonitis 1925
- Record forms 4018
- Recreation 3736
- Rectoceles 1915 2336
 (Fig) 2336
- Rectovaginal fistula 2513
 in lymphopathia venereum 472
- Rectum carcinoma 1917
 (Fig) 1917
 condyloma acuminatum, 1914
 congenital abnormalities 1911
 constipation avoidance 1909
 disturbances 1911
 (Fig) 1908
 treatment 1910
 examination methods 1907
 digital 3639
 indications in infancy 2735
 foreign bodies in 1915 3945
 hygiene 1909
 impaction in 3935
 treatment 3936
 in infancy examination 2735
 infections 1912
 infusion 1825
 local anesthesia for (Fig) 3979
 mucosa, replacement 1910
 polyps congenital 1912
 prolapse 1915
 complicating peritonitis 282
 stricture 1914
 in lymphopathia venereum 472
 temperature 3194
 of infants (Table) 2727
- Red blood cell count normal values (Table) 3693
 technic 3694
 damage to in sulfonamide therapy 85

- Red blood cell disturbances 1033
 (Fig) 1033
 fragility normal value (Table) 1036
 test 9706
 normal appearance 3699
 physiology 1033
 in urine 3693
 marrow count 1042
 sulfide of mercury as anti-epileptic 317
- Reduction in Colles fracture 3031
 (Fig) 3031
 of dislocated shoulder heel in axilla method 2973
 Kocher maneuver in 2973
 (Fig) 2973
 of dislocations anesthesia in 2963
 of fracture closed 2983
 open 2993
 (Table) 2985
- Reflex(es) temporomandibular joint 2066
- References selected list 4104
- Refred pain, 1477
- Reflex(es) abdominal superficial 3555
 Babinaki (Table) 3554
 Chaddock (Table) 3584
 cremasteric 3555
 examination (Table) 3584
 eyelid abnormal diff diag (Table) 1534
 Gordon (Table) 3584
 Oppenheim (Table) 3584
 patellar (Table) 3584
 plantar (Table) 3581
 visceromotor 1477
- Refraction 1535
 disturbances 1536
- Refrigeration therapy See *Cryotherapy*
- Registration of cell 10
- Registration definition 171
- Rehabilitation and coalescent car 4117
- Rehus treatment 3723
- Relapse 1750
- Rehuman diseases definition 1769
- Reinfection tuberculosis 257
- Reiter's disease 484
- Rejuvenation diff diag (Table) 2480
- Relapsing fever 357
 diagnosis 360
 by smear (Table) 51
 diff diag (Table) 3
 (Fig) 358
 louse as vector in (Table) 4
 ocular manifestations 1603
 prognosis 359
 serologic test in (Table) 60
 temperature curve in 45
 tick as vector in (Table) 40
 treatment 360
- Renal abscess 2359
 agene 2287
 albuminuria, diff diag (Table) 2371
 amyloidosis 2362
 artery aneurysm 2330
 aortic 2288
 embolization 2329
 occlusion 2319
 calculus 2314
 hyperparathyroidism 1227
 (Fig) 1228
 calceal anatomy 224
 anomalies 2284
- Renal carcinoma 2359
 circulation 2229
 (Fig) 2229
 colic 2315
 drugs in 2320
 in echinococcus cyst of bladder 2352
 morphine prescription for 2356
 diabetes, 1262
- Disturbances See also *Nephropathies*
 dyspepsia in diff diag (Table) 171
 dysuria in diff diag (Table) 2325
 hematuria in, diff diag (Table) 2307
 low back pain in diff diag (Table) 3072
 lumbar pain in diff diag (Table) 275
 pyuria in diff diag (Table) 232
 swellings in diff diag (Table) 1586
- Dwarfism 1223
 diff diag (Table) 2879
- Ectopia 2293
 (Fig) 2293
- Function impurulent in chronic glomerulonephritis 2344
 phenolsulfonphthalein in excretion and 3689
 tests 3687
 concentration 3687
 dilution 3687
 phenolsulphthalein 3688
 pitressin in, 1179
 in toxemia of pregnancy 2011
 in urinary lithiasis 2310
 urinary tests for 3637
- Glycosuria diff diag (Table) 3673
 in plumbism 763
- Infarcts 2330
- Infections 2362
- Injuries 2305
 diagnosis 2308
 (Fig) 2309
 treatment, 2309
- Insufficiency 2275
 compensated 277
 decompensated 278 See also *Asotemia*
 hemogram in 260
 hyperchloremia in diff diag (Table) 782
 hyperphosphatemia in diff diag (Table) 72
 hypopotasemia in diff diag (Table) 781
 hyperuricemia in diff diag (Table) 737
 hypochloremia in diff diag (Table) 73
 hyponatremia in diff diag (Table) 729
 osmotic disturbances in diff diag (Table) 299
 prophylaxis 2281
 treatment 2282
- Ischemia, 2273
 hypertension and Goldblatt experiment in 2273
 occurrence 2277
- Mobility factors in 2291
- Parenchymatous atrophy 2270
- Pelvis anatomy 2245
 in males 2234
 capacity 2250 3637
 tumors 2326
- Polycystic disease 291
- Rickets 1223
 tuberculosis 2347
 diagnosis 2350
- Tuberculosis (Fig) 223
 tumors 2326

- Renal tumors diff diag (Table) 1957
 swellings of back in diff diag (Table) 2822
 veins anomalies 2296
 thrombosis 2330
 Rendu-Osler Weber disease 1119 2203
 Renin 1149
 in hypertension 901
 in renal ischemia 2273
 Repair of organ procedures 3905
 Reproduction asexual in bacteria 139
 Reproductive glands accessory anatomy 2398
 3638
 system contrast roentgenography in 3742
 female See *Female reproductive system*
 male See *Male reproductive system*
 Reptiles bites of 3196
 Resection obstructive of colon 1836
 Residency 4033
 Resins 1828
 Resistance to infection 75
 Resonance types of in percussion 3535
 Resorcin ointments in alopecia prescription
 3445
 prescription 3126 3357 3394
 for scalp 3364
 Resorcinol 3308
 lotion prescription 3126
 ointment in alopecia areata prescription
 3448
 in seborrhea prescription 3431
 Respiration artificial 3766
 (Fig) 3767
 external mechanism 2013
 internal mechanism 2013
 rate abnormal 2014
 normal 2014
 skin function in 3100
 Respirator 9767
 in poliomyelitis 464
 Respiratory arrest in tetanus 293
 disturbances abdominal pain in diff diag
 (Table) 1748
 left upper quadrant in diff diag
 (Table) 1942
 right upper quadrant, diff diag
 (Table) 1959
 rigidity in diff diag (Table) 1746
 allergic 2096
 in backward failure 913
 chemical 2062
 manifestations (Table) 2065
 clubbed fingers in diff diag (Table) 2064
 diff diag (Table) 2014 2016
 hemoptysis in diff diag (Table) 2059
 of infancy list 2759
 anoxia in, diff diag (Table) 1595
 neurogenic 2090
 somnia in diff diag (Table) 1308
 vascular 2086
 infections 2103
 clinical manifestations (Table) 2106
 codeine prescription for 3835
 etiology (Table) 2106
 silver preparations in evaluation 3127
 virus 391
 irritation due to chemicals (Table) 2065
 passages foreign bodies in 2984
 in typhoid fever 229
 rate of infants (Table) 2727
 normal, 3493
 Respiratory sounds diminished diff diag
 (Table) 3542
 system 2013
 anomalies congenital (Table) 2043
 contrast roentgenography in 3742
 examination methods 2015
 infections 2105
 mechanical lesions 2045
 (Table) 2046
 metabolic disturbances 2094
 neoplasms 2066
 physiology 2013
 topical applications for 2028
 treatment methods 2027
 Rest 3764
 cure in backward failure 948
 in hospital 3754
 in hypertension 913
 in rheumatic fever 191
 by transplantation 3754
 in tuberculosis 267
 termination 272
 dangers of 3755
 at home 3754
 by immobilization 3755
 Restoration of function 3755
 Retardation definition 1298
 Reticular apparatus 3
 Reticulocyte count technic 3705
 normal values (Table) 3692
 Reticulocytosis in sulfonamide therapy 93
 Reticulo-endothelial system 1132
 cytology 1035 1916
 diseases 1132
 Reticulo-endothelioses 1132
 bone radiotranslucency in diff diag (Table)
 2806
 cervical spine disturbances in diff diag
 (Table) 2818
 lymphadenopathy in, diff diag (Table)
 1137
 pigmentation in diff diag (Table) 3156
 skin in 3211
 Retina, anatomy 3617
 artery obstruction 1587
 changes in chronic glomerulonephritis 2381
 contusion etiology (Table) 1571
 symptoms (Table) 1571
 detachment 1573
 operations 1559
 examination 3631
 folds 1564
 hemorrhages 1637
 macular degeneration (Table) 1602
 melanosis 1663
 vein obstruction, 1589
 vessels in arteriosclerosis 979
 Retinitis 1637
 pigmentosa, site (Table) 1592
 proliferans 1639
 Retinopathy arteriosclerotic (Fig) 907 1586
 Retinoscopy 1541
 Retroperistalsis 1743
 Retroperitoneal hemorrhage in peritonsils
 nodosa, 1028
 Retropharyngeal abscess 2156
 diff diag (Table) 2752
 Reverse peritonsils syndrome 1778
 R factor 631
 Rh agglutinins definition, 1067

- Rh agglutinogens definition 1067
 anti-serum definition 1067
 blocking serum definition, 1067
 blood types definition 1067
 factor 3709
 in blood transfusion 37-9
 immunization results of 1068
 incompatibility definition 1067
 sensitization definition 1067
 Rhagade definition 3104
 of skin diff diag (Table) 3218
 Rheumatic endocarditis 1016
 diff diag (Table) 1018
 electrocardiogram in 1017
 (Fig) 1016
 fever 186
 circulatory disturbances in, 190
 (Table) 254
 complications 191
 dermatoses in 190
 diff diag (Table) 3211
 diagnosis 191
 diff diag (Table) 28 19^o 405
 edema in 714
 fever in diff diag (Table) 1006
 in infancy diff diag (Table) 2731
 joint pain in diff diag (Table) 2902
 pericarditis in 1007 1009
 prevention 197
 rheumatoid arthritis and diff diag., 2917
 skeletal disorders in diff diag (Table)
 2934
 treatment 193
 chemotherapy in 195
 salicylates in 194
 myocarditis 1014
 pericarditis symptoms 1007
 purpura 8424
 valvular defect (Fig) 837 842 843 845 846
 Rheumatism 2900
 tuberculous 2946
 Rheumatoid arthritis 2910 See also *Arthritis*
 rheumatoid
 dermatoses of diff diag (Table) 3211
 stages (Fig) 2912
 swelling in diff diag (Table) 965
 treatment summary 2 5
 x ray in (Fig) 2914
 Rhinitis acute 2114
 stop: 2077
 atrophic 2122
 estrog m in, dosage 2516
 chronic hypertrophic, 2120
 complicating scarlet fever 179
 membranous diphtheritic 2115
 non seasonal vasomotor 2098
 allergen: 553
 seasonal 2097
 vasomotor allergen in 553
 Rhogenic bacterial abscess 2129
 cavernous sinus thrombosis 2130
 meningitis 2128
 orbital cellulitis 2130
 sinus 2131
 Rhinology indication for consulta-
 tion 2021 3654
 Rhinoliths clinical manifestations (Table) 2046
 Rhinologist, nonoperative treatment by 2036
 operative treatment by 2038
 Rhinophyma, 2109 2367
 Rhinophyma diff diag (Table) 3264
 (Fig) 3359
 nose in diff diag (Table) 2110
 Rhinoplasty indications for 3995
 Rhinorrhea, cerebrospinal in skull fractures,
 1450
 Rhinocleroma, 2109
 diff diag (Table) 3264 3269
 nose in diff diag (Table) 2110
 Rhinoscopy anterior 3592
 (Fig) 3592
 posterior 2021
 Rhinosporidiosis 505
 Rhodanates 3895
 Rhodesian trypanosomiasis 531
 Rhubarb as cathartic 1828
 in infancy dosage 2745
 Rhythm of heart, 773
 bigeminal electrocardiogram in (Fig) 898
 trigeminal, electrocardiogram in (Fig) 857
 840 844 845 846 847 848
 Rib(s) fracture treatment (Table) 3005
 slipping pain in right upper quadrant in
 diff diag (Table) 1039
 in pregnancy 2648
 stretching exercises 3758 3759
 Riboflavin 623
 deficiency 623
 cutaneous manifestations 3238
 diff diag (Table) 3332
 (Fig) 624
 ophthalmic manifestations 1598
 oral manifestations 1675
 scarring of lips in (Fig) 628
 skin in diff diag (Table) 3218
 in rosaceous keratitis dosage 3358
 therapeutics 3325
 Rickets adult 2358
 craniofacial deform diff diag (Table) 2774
 decreased growth of diff diag (Table) 2762
 diff diag (Table) 223
 differentiation from hyperparathyroidism
 1230
 due to vitamin D deficiency (Fig) 2366
 epiphyseal in diff diag (Table) 2930
 fontanelles in diff diag (Table) 2729
 gait disturbances and (Table) 2 36
 hypophosphatemia in diff diag (Table) 728
 infantile 2850
 (Fig) 2851
 joint pain in diff diag (Table) 2800
 macrocephalus from diff diag (Table) 2774
 oral in 1676
 ossification disturbances in diff diag
 (Table) 2799
 phosphatase activity in diff diag (Table)
 728
 renal 1228
 diff diag (Table) 693
 teeth: 1676
 (Fig) 1674
 in vitamin D deficiency (Fig) 618
 vitamin D therapy in dosage 621
 Rickettsia causing disease 39
 osteal 381
 (Fig) 368
 prostate, 349
 (Fig) 366
 Rickettsial infections 366
 classification (Table) 367

- Rickettsial infections: chills in (Table) 37
 clinical manifestations 368
 cutaneous manifestations (Table) 3246
 diff diag (Table) 192
 leukocytosis in diff diag (Table) 1097
 methods of diagnosis (Table) 3246
 skeletal disorders in diff diag (Table) 2034
 treatment: penicillin in 111
 streptomycin in 111
 sulfonamides in 92
- Rickettsialpox See *New Guinea spotted fever*
- Riedel's disease See *Thyroiditis*
 lobe 1956
- Riehl's melanosis 3176
 pigmentation in diff diag (Table) 3156
- Riggs disease See *Pyorrhea alveolaris*
- Rigidity of abdominal wall 3551
 involuntary diff diag (Table) 1746
 of muscles diff diag (Table) 2882
 in paralysis agitans 1606
 in subcortical hemorrhage 1454
- Ring pessaries 2542
- Ringworm of axillary hair 3305
 of beard 3304
 (Fig) 3303
 of body 3293
 (Fig) 3291
 of external auditory canal 3305
 of feet 3293
 (Fig) 3294
 of groin 3295
 of nails 3304
 (Fig) 3294
 of scalp 3302
 (Fig) 3294
- Rinne test 1486 2017
- Rio Grande fever 314 See also *Brucellosis*
- Ritter's disease See *Dermatitis exfoliativa neonatorum*
- Rochelle salts 1830
- Rocking seesaw method 3767
- Rocky Mountain spotted fever 376
 animal injection in (Fig) ■
 antiserum 390
 culture in (Table) 51
 diagnosis 379
 diff diag (Table) 174 379 413
 immune serum 82
 quarantine data (Table) 67
 rash in diff diag (Table) 172
 (Fig) 378
 serologic test in (Table) 60
 symptoms other than rash in diff
 diag (Table) 2790
 tick as vector in (Table) 42
 treatment 379
 vaccine 380
 evaluation 79
- Rodent ulcer See *Basal-cell epithelioma*
- Roentgen ray(s) alopecia caused by 3441
 injuries due to 3177
 sets, portable 3740
- Roentgenographic control in fracture 2900
- Roentgenography in acute pneumonia 2191
 in brain tumors 1429
 in circulatory disturbances 732
 contrast (Table) 3742
 in cutaneous horn prophylactic 3217
 dental 1657
- Roentgenography dental (Fig) 1658 1659
 in Ewing's tumor 2817
 in fracture (Table) 2983
 in gallbladder disease 1088
 in gout 2873
 in hyperparathyroidism 1230
 in infectious arthritis 2907
 iodide in 609
 in lobar pneumonia 2174
 (Fig) 2175
 in lung abscess 2216
 (Fig) 2217 2218
 in mediastinitis 2294
 in osteo arthritis evaluation 2861
 in osteogenic sarcoma 2843
 in respiratory infections 2103
 in rickets 2852
 of skull 1429
 in spinal cord tumors 1435
 of stomach 1744
 (Fig) 1658 1659
 in syphilis 330
 in tuberculosis 259 273
 of hip 2942
- Roentgenologist indications for consultation
 3635
- Roentgenology diagnostic 3740
 (Table) 3741
- Roentgenotherapy 3796
 in acne keloid 3233
 in acne vulgaris 3364
 in agranulocytosis 1100
 alkalosis from diff diag (Table) 722
 in blood diseases 1053
 in brain tumors 1430
 in bromidrosis 3463
 in carcinoma of prostate 2450
 in cough 2032
 Coulard method 3797
 in diabetes insipidus 1184
 in endocrinopathies 1150
 in drug eruptions 3342
 in Ewing's tumor 2817
 for eye 1549
 in granuloma fungoides 3387
 in herpes zoster 437
 in Hodgkin's disease 1140
 in hyperhidrosis evaluation 3461
 in hyperthyroidism 1215
 in hypertrichosis danger in 3438
 indications 3797
 in inoperable carcinoma, 377
 in keloids 3167
 in laryngeal cancer 2075
 in leukemia, 1106
 in pertussis 281
 in polycythemia 1031
 postoperative in breast cancer 2583
 in rheumatic fever 196
 in seborrheic dermatitis, 3131
 in synovial cyst 3203
 in syringomyelia 1503
 technic 3796
 in thymic asthma prophylactic 1235
 in tuberculous endometritis 2611
- Roger's disease 957
 manifestations (Table) 964
- Rollier method of irradiation 3786
- Room temperature in infectious diseases 70
- Root vegetables food value of 643

- Rorschach test, I ■
 Rosacea like tuberculi of Lewandowsky 3170
 diff diag (Table) 3163 3169
 Rose fever 2027
 rash 419
 spots in typhoid fever 230 (Fig) 231
 Rosenbach's test in paroxysmal hemoglobinuria 1075
 Roseola See *Measles*
 infantum 412 See also *Sixth disease*
 syphilis, 3281
 Rotation test 2018
 Rotenone as insecticide 3126
 Rothera's urine test, 3650
 Rothmund's syndrome 3233
 Rouges nose 3133
 Roubage diet 669
 Round-cell sarcoma (Fig) 575
 Roundworms causing disease 41
 infestations, 1902
 life cycle (Fig) 3320
 size (Fig) 1804
 RR interval, abnormal analysis (Table) 807
 RS-T interval abnormal, analysis (Table) 807
 interval normal, analysis (Table) 807
 R type of bacterial growth 141
 Rubefacient bath 3133
 Rubella, 417
 co genital anomalies and, 2672
 diff diag 418 (Table) 1 4 180 415
 lymphadenopathy in, diff diag (Table) 1134
 quarantine data on (Table) 66
 rash in, diff diag (Table) 172
 symptoms other than rash in diff diag (Table) 270
 throat in diff diag (Table) 3601
 Rubin test of tubal insufflation, 2498
 Rückfall fever 377
 typhus 337
 Rumination definition, 1772
 diff diag (Table) 1770
 Rumpel-Leed phenomenon, 678
 Russell traction in femur fracture 3044
 Russian bath (Table) 3,91
 forest spring disease 44
 neutralization test in 60
 serologic test in (Table) 60
 thirl geographic distribution (Fig) 560
 Rutin, 1123
 R-wave abnormal analysis (Table) 806
 normal analysis of (Table) 806

 S BER tibia in prenatal syphilis 3267
 Saccharin in diabetes mellitus, 1,54
 Sacro-iliac belt (Fig) 3070
 displacement, 2970
 sprain, 2922
 tuberculosis, 2945
 Sacrum Abnormal (Fig) 2634
 fracture 3012
 treatment (Table) 200
 hiatus location for caudal anesthesia, 2683
 Saddle nose in prenatal syphilis 3287
 Sadi in definition, 1304
 Safe period 2130
 Safranine preparation, 49
 Sage prairie distribution of (Fig) 560
 Sagebrush, geographic distribution of (Fig) 560
 Sahli-Hellsche hemometer (Fig) 3624
 Saint Anthony's fire See *Erysipelas*
 St. Louis encephalitis, 4,4
 clinical manifestations, 420
 diff diag (Table) 443
 mosquito as vector in (Table) 4
 neutralization test in, 60
 serologic test in (Table) 60
 treatment, 457
 vaccine evaluation, 79
 Salicylate bicarbonate powder, prescription, 3333
 Salicylates 3331
 mercuric, description, 131
 in pericarditis, 1008, 1009 1010
 in rheumatic fever 124
 prophylaxis 193
 in rheumatoid arthritis, 2921
 skin reactions caused by 3340
 therapeutic test in infectious arthritis, 2906
 Salicylic acid as antiseptic, 3126
 for corns, 3165
 ointment, prescription 3172
 in seborrhea, prescription, 3431 3434
 in psoriasis prescriptions, 3419
 Sals cathartics 1830
 injections, thrombo-angitis obliterans, 1031
 solution in fracture (Table) 2994
 Saliva, effect on mouth bacteria, 147
 Salivary digestion, 162
 glands, 3318
 adenoma, 1716
 anatomy 5399
 calculus in, 1711
 (Fig) 1711
 carcinoma 1719
 disturbances, diff diag (Table) 5317
 Salvation exercises diff diag (Table) 1 09
 in tumors of oropharynx, 2070
 in mercurial therapy 130
 Salmonella aertrycke, infection by 242
 cholerae suis infection by 242
 enteritidis infection by ■■
 infectus 239
 culture in (Table) 54
 serologic test in (Table) 60
 paratyphi, infection by 241
 poisoning diff diag (Table) 240
 schottmuelleri, infection by 24
 properties (Table) 226
 staphylofer infection by 242
 typhimurium, infection by ■■
 properties (Table) 2 ■■
 Sals in photosensitization prescription 3125
 Salpa go-nephrectomy indications for 3994
 Salpingo-oophoritis abdominal pain in, left
 lower quadrant, diff diag (Table) 1668
 in right lower quadrant, diff diag (Table) 1330
 gonorrheal, 2608
 tuberculous, 2610
 Salt deprivation test, in adrenal insufficiency 1276
 diet low in, 675
 dietary arteriosclerosis and, 978
 edema, 12
 in fatigue 2391

- Salt restriction in congestive failure 949
 in obesity 607
 in Addison's disease 1276
- Salvarsan in spirillar infections 3113
- Salves 3136
- Salyrgen 2262^a
- Salyrgen theophylline 2262
 in congestive failure dose 950
- San Joaquin valley fever 499 See also *Coccidioidomycosis*
- Sand flea bites 3100
- Sandfly fever 480
 (Fig) 3191
 fly as vector in (Table) 42
- Sandoptal dosage (Table) 3637
- Sanitarium treatment in rheumatic fever 197
 in tuberculosis 268
- Sanocrysin in rheumatoid arthritis 2922
- Santonin 1896
 poisoning ophthalmic manifestations 1597
 (Table) 1898
- Saphenous vein ligation (Fig) 3943
 indications 3993
 technic 3942
- Sapropira taxonomic key to 309
- Sarcoidal leprosy 270
 (Fig) 276
- Sarcoidosis 3271
 diff diag (Table) 413
 oral manifestations 1673
 pigmentation in diff diag (Table) 3156
 rash in diff diag (Table) 2283
 of salivary gland diff diag (Table) 3, 17
 sarcoidal leprosy vs 276
- Sarcoma of bone 2843
 (Fig) 2843
 osteomyelitis and diff diag 2936
 swelling in diff diag (Table) 2953
- botryoides of vagina 2349
- of breast 2583
- of cervix 2553
- idiopathic multiple hemorrhagic 3226
 diff diag (Table) 3211 3214 3219
 3270
 (Figs) 3221
- mixed cell (Fig) 575
- of ovary 2572
 (Fig) 575
- of penis 2440
- of pericardium 967
- round-cell (Fig) 575
- of skin 3226
 classification 3246
- spindle-cell (Fig) 575
- of thyroid (Fig) 575
- of uterus 2564
- of vagina 2549
- Sarcoptes scabiei (Fig) 3181
- Satyriasis definition 1303
- Satyrism 2411
- Scabies 3180
 of axilla diff diag (Table) 3253
 balsam of Peru in prescription 3114
 betanaphthol in treatment of prescription 3115
 diff diag (Table) 3298 3335 3360 3369
 3379
 (Fig) 3183
 of genitals, diff diag (Table) 3275
 in infancy diff diag (Table) 3147
- Scabies pyrethrum in 3125
 rotenone in, 3126
 sulfur in 3128
 prescription 3129
- Scale definition 3101
- Scalenus anticus syndrome 2953
- Scaling dermatoses diff diag (Table) 3332
- Scalp dermatoses of diff diag (Table) 3254
 examination 3505
 oily treatment 3365
 preparations 3141
 psoriasis of 3416
 ringworm of 3302
 (Fig) 3294
- seborrhea of ointment prescription for 3137
- Scaphocephalus diff diag (Table) 2729 2774
- Scapula elevation, 2823
 congenital, pain in diff diag (Table) 4940
- fracture 3017
 treatment (Table) 3014
- Scar 3166
 definition 3104
- Scarlatinal angina (Fig) 177
- Scarlatiform rashes diff diag (Table) 180
- Scarlet fever 171
 active immunization in technic, 184
 antitoxin dosage 181
 circulatory disturbances in (Table) 954
 diagnosis 179
 Dick test in 183
 (Fig) 58
 diff diag (Table) 174 180 192 1006
 immune serum 166
 evaluation 111
 immunity after 76
 immunization time table for 80
 oral manifestations in 1670
 passive immunization in 185
 prevention 183
 quarantine data on (Table) 67
 rash in diff diag (Table) 172
 Schultz Charlton reaction in (Fig) 181
 skeletal disorders in diff diag (Table) 2934
- streptococcus antitoxin 166
 evaluation, 111
 serologic test in (Table) 60
 skin test in (Table) 111
- symptoms other than rash in diff diag (Table) 2790
- throat in diff diag (Table) 3600
- treatment 181
- red in skin diseases 3127
- Scarring 10
- Schaefer prone pressure method 3707
- Schanz collar (Fig) 2967
- Scheuermann's disease, 2926
- Schick test, positive (Fig) 302
 technic, 304
 time table for 80
- Schiller test in cervical carcinoma 2553
- Schilling hemogram 3704
- Schultz tonometer (Fig) 1545
- Schistosoma haematobium (Fig) 810
 morphology (Table) 3732
- pyoniscum morphology (Table) 3732
- life cycle 338
- mansoni in stool (Fig) 3731
 morphology (Table) 3732
- Schistosoma dermatitis, 3195

- Schistosoma dermatitis (Fig) 3196
 Schistosomiasis 537
 antimony in, 132
 of bladder 2341
 fuadin in dosage 133
 hyperproteinemia in diff diag (Table)
 735
 prevention 339
 serologic test in (Table) 60
 skin test in (Table) 60
 treatment 338
 Schizophrenia, 1364
 diff diag (Table) 1366
 electric convulsive therapy in results
 (Table) 1367
 treatment 1368
 Schizosaccharomyces hominis 3412
 Schmidt's test for bile pigment 3729
 Schmincke tumor of nasopharynx, 2063
 Schneiderian membrane anatomy 3589
 Schönlein's purpura 3424
 School age child emotional and mental growth
 in 2723
 scholastic standing 2728
 Schott exercises 3736
 Schüller-Christian syndrome See Hand-Schüller-
 Christian syndrome
 Schultz Charlton test, 179
 (Fig) 184
 Sciatic nerve injuries motor signs in (Table)
 1492
 scoliosis 3571
 Sciatica 1492 3074
 (Fig) 3076
 pregnancy and 2647
 Scissor's gait diff diag (Table) 3406
 Sclera anatomy 3014
 pigmentation (Table) 1591
 Scleral injection in riboflavin deficiency (Fig)
 624
 Sclerodema adutorum 3426
 diff diag (Table) 3426
 Sclerema in infancy diff diag (Table) 3147
 neonatorum 3157
 Scleritis 1631
 (Fig) 1631
 Sclerodactylia 3423
 Scleroderma, 3427
 alopecia and diff diag (Table) 3439
 circumscribed, 3429
 diff diag (Table) 3269 3438 3404
 diffuse 3427
 (Fig) 3429
 fever in, 25
 linear localization 3429
 treatment, 3429
 Sclerosing solution, dosage in injection of
 hydrocele 2433 2937
 Sclerosis 1503
 amyotrophic lateral 2886
 diff diag (Table) 2887
 spasticity in (Table) 2737
 combined subacute 1503
 coronary 983
 disseminated 1504
 lateral amyotrophic 1503
 primary 1503
 multiple 1504
 optic manifestations 1585
 psychosis in, 1386
 Sclerosis multiple psychosis in diff diag
 (Table) 1376
 in periarthritis nodosa, 1028
 presenile 982
 right heart failure from 942
 spinal cord disturbances in diff diag
 (Table) 1433
 (Table) 1502
 tuberosus 1414
 diff diag (Table) 1333
 (Fig) 1413 1414
 Sclerotica blue 1560
 Scoliosis 369
 congenital (Fig) 3058
 diff diag (Table) 3060
 habitual (Fig) 3061
 paralytic (Fig) 3061
 posture and, 3057
 sciotic, 3063
 Scopalamine 3875
 for cortical amnesia 3876
 in obstetrics dosage 2679
 in paralysis agitans 1506 3876
 pre anesthetic dosage 3013
 in seasickness 1487
 shock prevention and 937
 Scorbutus 2854
 Scorpions bites 3197
 Scotch douche (Table) 3791
 Scotomas diff diag (Table) 1615
 (Fig) 1543
 Scout him indication 2245 2251
 Scratch tests in allergy (Fig) 555
 technic 557
 vaccination technic 429
 Screen test 1543
 Scrofuloderma 3262
 diff diag (Table) 3163
 (Fig) 3263
 Scrotum abscess 438
 anatomy 2394 3637
 angioneurotic edema, 2460
 anomalies congenital 2463
 cleft 2463
 contuso 2478
 cysts 2423
 elephantiasis 2459
 emphysema 2459
 erysipelas 2459
 gangrene 2460
 pain in diff diag (Table) 2430
 pathology 2394
 swellings of diff diag (Table) 2441
 transillumination of 3632
 tumors benign 2440
 diff diag (Table) 2441
 malignant 2440
 Scrub typhus (Fig) 382
 Scurvy 1120 2854
 capillary hemorrhage in (Fig) 623
 diff diag (Table) 1112 3379 3398
 epiphyses in diff diag (Table) 2930
 (Fig) 2854
 gingivitis of (Fig) 628
 in infant cy diff diag (Table) 3147
 gait disturbances and (Table) 2736
 infantile 1120
 joint pain in diff diag (Table) 2802
 oral manifestations 1676
 Seasickness 1487

- Salt restriction in congestive failure 949
 in obesity 697
 in Addison's disease 1276
- Salvarsan in spirillar infections 3113
- Salves 3136
- Salyrgan 2262
- Salyrgan theophylline 2262
 in congestive failure dose 950
- San Joaquin valley fever 499 See also *Coccidioidomycosis*
- Sand Sea bites 3190
- Sandfly fever 480
 (Fig) 3191
 fly as vector in (Table) 42
- Sandoptal dosage (Table) 3637
- Sanitatum treatment in rheumatic fever 197
 in tuberculosis 268
- Sancrocyan in rheumatoid arthritis 2929
- Santonin 1896
 poisoning ophthalmic manifestations 1897
 (Table) 1898
- Saphenous vein ligation (Fig) 2943
 indications 2995
 technic 3912
- Saprosira taxonomic key to 390
- Sarcoid leprosy 276
 (Fig) 276
- Sarcoidosis 2971
 diff diag (Table) 415
 oral manifestations 1673
 pigmentation in diff diag (Table) 3156
 rash in diff diag (Table) 3283
 of salivary gland diff diag (Table) 3517
 sarcoid leprosy vs 276
- Sarcoma of bone 2843
 (Fig) 2843
 osteomyelitis and diff diag 2938
 swelling in diff diag (Table) 2935
- botryoides of vagina 2549
- of breast 2593
- of cervix 2553
- idiopathic multiple hemorrhage 3226
 diff diag (Table) 3211 3214 3219
 3379
 (Fig) 3221
- mixed cell (Fig) 575
- of ovary 2572
 (Fig) 575
- of penis 2440
- of pericardium 967
- round-cell (Fig) 575
- of skin 3206
 classification 3226
- spindle cell (Fig) 575
- of thyroid (Fig) 575
- of uterus 2564
- of vagina 2549
- Sarcoptes scabiei (Fig) 3181
- Satyrinus definition 1303
- Satyrism 2431
- Scabies 3180
 of axilla diff diag (Table) 3 53
 balsam of Peru in prescription 3114
 betanaphthol in treatment of prescription 3115
 diff diag (Table) 3298 3335 3340 3369
 3379
 (Fig) 3183
 of genitals diff diag (Table) 3275
 in infancy diff diag (Table) 3147
- Scabies pyrethrum in 3125
- roteneone in 3190
- sulfur in 3198
 prescription 3129
- Scale definition 3101
- Scales anticus syndrome 2955
- Scaling dermatoses diff diag (Table) 3389
- Scalp dermatoses of diff diag (Table) 3254
 examination 3505
 oily treatment 3365
 preparations 3141
 psoriasis of 3416
 ringworm of 3302
 (Fig) 3294
- seborrhoea of ointment prescription for 3137
- Scaphocephalus diff diag (Table) 2729 2774
- Scapula elevation, 2923
 congenital pain in diff diag (Table) 2940
- fracture 3017
 treatment (Table) 3014
- Scar 3166
 definition 3104
- Scarlatinal angina (Fig) 177
- Scarlatiniform rashes diff diag (Table) 180
- Scarlet fever 171
 active immunization in technic, 184
 antitoxin dosage 181
 circulatory disturbances in (Table) 234
 diagnosis 179
 Dick test in 183
 (Fig) 58
 diff diag (Table) 174 180 192 1006
- immune serum 186
 evaluation, 182
- immunity after 76
- immunization time table for 80
- oral manifestations in 1670
- passive immunization in 183
- prevention 183
- quarantine data on (Table) 67
- rash in diff diag (Table) 172
- Schultz-Charlton reaction in (Fig) 164
- skeletal disorders in diff diag (Table) 2934
- streptococcus antitoxin, 166
 evaluation, 83
 serologic test in (Table) 60
- skin test in (Table) 60
- symptoms other than rash in diff diag (Table) 2796
- throat in diff diag (Table) 3600
- treatment 181
- red in skin diseases 3127
- Scarring 10
- Schaefer prone pressure method 3667
- Schanz collar (Fig) 2967
- Scheuermann's disease, 2928
- Schick test positive (Fig) 304
 technic, 304
 time table for 60
- Schiller test in cervical carcinoma 2553
- Schilling hemogram 3704
- Schrots tonometer (Fig) 1545
- Schistosoma haematobium (Fig) 310
 morphology (Table) 3732
- japonicum morphology (Table) 3732
- life cycle 638
- manoni in stool (Fig) 3731
- morphology (Table) 3732
- Schistosoma dermatitis, 3193

- Schistosoma dermatitis (Fig) 3190
 Schistosomiasis 337
 antimony in, 134
 of bladder 3311
 lumbin in dosage 133
 Hyperproteinemia in diff diag (Table)
 735
 prevention 339
 serologic test in (Table) 60
 skin test in (Table) 60
 treatment, 338
 Schizophrenia, 1364
 diff diag (Table) 1360
 electric convulsive therapy in results
 (Table) 1367
 treatment, 1368
 Schizosaccharomyces hominis 3412
 Schmidt's test for bile pigment, 3729
 Schminke tumor of nasopharynx, 2063
 Schneiderian membrane anatomy 3389
 Schönlein's purpura 3124
 School age child emotional and mental growth
 in 2728
 scholastic standing 2729
 Schott exercises 3754
 Schuller-Christian syndrome See Hand-Schul-
 ler-Christian syndrome
 Sebuke-Chariton test 179
 (Fig) 164
 Sciatic nerve injuries motor signs in (Table)
 1492
 scoliosis 3371
 Sciatica 1492 3076
 (Fig) 3076
 pregnancy and 2647
 Scissors gait diff diag (Table) 3196
 Sclera, anatomy 3614
 pigmentation (Table) 1391
 Scleral injection in riboflavin deficiency (Fig)
 384
 Scleredema adultorum 3426
 diff diag (Table) 3426
 Sclerema in infancy diff diag (Table) 3167
 neonatorum 3167
 Scleritis 1631
 (Fig) 1631
 Sclerodactylus 3428
 Scleroderma, 3427
 alopecia and diff diag (Table) 3439
 circumscribed, 3429
 diff diag (Table) 3269 3298 3104
 diffuse 3427
 (Fig) 3428
 fever in, 25
 linear localization, 3429
 treatment, 3429
 Sclerous evolution, dosage in injection of
 hydrocele 2433 3037
 Sclerosis 1003
 amyotrophic lateral 2886
 diff diag (Table) 2987
 spasticity in (Table) 2 37
 combined subacute 1303
 coronary 983
 disseminated 1504
 lateral amyotrophic 1605
 primary 1603
 multiple 1504
 optic manifestations 1585
 psychosis in, 1286
 Sclerosis multiple psychosis in diff diag
 (Table) 1375
 in periarthritis nodosa 1028
 presenile 282
 right heart failure from 242
 spinal cord disturbances in diff diag
 (Table) 1433
 (Table) 1500
 tuberosa 1414
 diff diag (Table) 1335
 (Fig) 1415 1414
 Sclerotics blue 1560
 Scrobbins 3049
 congenital (Fig) 3059
 diff diag (Table) 3060
 habitual (Fig) 3061
 paralytic (Fig) 3061
 posture and, 3057
 static 3063
 Scopolamine 3375
 for cortical amnesia 3876
 in obstetrics dosage 26 9
 in paralysis agitans 1506 3376
 pre-anesthetic dosage 3015
 in seasickness 1497
 shock prevention and 337
 Scrobbins 2954
 Scorpions bites 3197
 Scotch douche (Table) 3791
 Scotomas diff diag (Table) 1645
 (Fig) 1543
 Scout film indication 2215 2221
 Scratch tests in allergy (Fig) 333
 technic 657
 vaccination technic 429
 Screen test 1543
 Scrofuloderma 3262
 diff diag (Table) 3163
 (Fig) 3263
 Scrotum abscess 2139
 anatomy 2301 3637
 angioneurotic edema, 2160
 anomalies congenital 2423
 cleft 2173
 contusions 2429
 cysts 213
 elephantiasis 2439
 emphysema 2458
 erysipelas 2138
 gangrene 2460
 pain in diff diag (Table) 2430
 pathology 2394
 swellings of diff diag (Table) 2411
 transillumination of 3632
 tumors benign 2440
 diff diag (Table) 2441
 malignant 2440
 Scrofula typhus (Fig) 292
 Scurvy 1170 2354
 capillary hemorrhage in (Fig) 623
 diff diag (Table) 1172 3379 3398
 epiphyseal in diff diag (Table) 2930
 (Fig) 2844
 gingivitis of (Fig) 623
 in infancy diff diag (Table) 3147
 gait disturbances and (Table) 2783
 infantile 1120
 joint pain in, diff diag (Table) 2802
 oral manifestations 1676
 Seascickness, 1487

- Salt restriction in congestive failure 949
 in obesity 697
 in Addison's disease 1276
- Salvarsan in spirillar infections 3113
- Salves 3136
- Salyrgan 2262
- Salyrgan theophylline* 2262
 in congestive failure dose 950
- San Joaquin valley fever 499 See also *Coccidioidomycosis*
- Sand flea bites 3190
- Sandfly fever 480
 (Fig) 3191
 fly as vector in (Table) 42
- Sandoptal dosage (Table) 3837
- Sanitarium treatment in rheumatic fever 197
 in tuberculosis 268
- Sarocrysin in rheumatoid arthritis 2922
- Santonin 1696
 poisoning ophthalmic manifestations 1697
 (Table) 1899
- Saphenous vein ligation (Fig) 3943
 indications 3995
 technic 3942
- Sapropira taxonomic key to 329
- Sarcoidal leprosy 276
 (Fig) 276
- Sarcoidosis 3271
 diff diag (Table) 413
 oral manifestations 1673
 pigmentation in diff diag (Table) 3156
 rash in diff diag (Table) 3283
 of salivary gland diff diag (Table) 3517
 sarcoidal leprosy vs 276
- Sarcoma of bone 2843
 (Fig) 2843
 osteomyelitis and diff diag 2936
 swelling in diff diag (Table) 2955
- botryoides of vagina 2549
 of breast 2583
 of cervix 2553
- idiopathic multiple hemorrhage 3226
 diff diag (Table) 3211 3214 3219
 3219
 (Fig) 3221
- mixed cell (Fig) 375
- of ovary 2572
 (Fig) 375
- of penis 2440
- of pericardium 967
- round cell (Fig) 573
- of skin 3226
 classification, 3226
- spindle cell (Fig) 375
- of thyroid (Fig) 375
- of uterus 2504
- of vagina 2519
- Sarcoptes scabiei (Fig) 3181
- Satyrism definition 1303
- Satyrism 2411
- Scabies 3180
 of axilla, diff diag (Table) 3253
 balsam of Peru in prescription 3114
 betanaphthol in treatment of prescription 3115
 diff diag (Table) 3298 3335 3360 3369
 3370
 (Fig) 3183
 of genitals, diff diag (Table) 3275
 in infancy diff diag (Table) 3147
- Scabies pyrethrum in 3125
 rotenone in 3126
 sulfur in 3123
 prescription 3129
- Scale definition 3104
- Scalenus anticus syndrome 2953
- Scaling dermatoses diff diag (Table) 3332
- Scalp dermatoses of diff diag (Table) 3254
 examination 3305
 only treatment 3365
 preparations 3141
 psoriasis of 3416
 ringworm of 3302
 (Fig) 3294
 seborrhea of ointment prescription for 3137
- Scaphocephalus diff diag (Table) 2729 2774
- Scapula elevation 2923
 congenital pain in diff diag (Table) 2940
- fracture 3017
 treatment (Table) 3014
- Scar 3166
 definition 3104
- Scarlatinal angina (Fig) 177
- Scarlatiform rashes diff diag (Table) 180
- Scarlet fever 171
 active immunization in technic, 184
 antitoxin dosage 181
 circulatory disturbances in (Table) 954
 diagnosis 179
 Dick test in 183
 (Fig) 58
 diff diag (Table) 174 180 192 1006
 immune serum 166
 evaluation, 82
 immunity after 78
 immunization, time table for 80
 oral manifestations in 1670
 passive immunization in 185
 prevention 183
 quarantine data on (Table) 67
 rash in diff diag (Table) 172
 Schultz-Charlton reaction in (Fig) 184
 skeletal disorders in diff diag (Table) 2934
 streptococcus antitoxin, 166
 evaluation 83
 serologic test in (Table) 60
 skin test in (Table) 80
 symptoms other than rash in diff diag (Table) 2790
 throat in diff diag (Table) 3600
 treatment 181
 red in skin diseases 3127
- Scarring 10
- Schaefer prone pressure method 3767
- Schanz collar (Fig) 2967
- Scheuermann's disease, 2926
- Schick test positive (Fig) 392
 technic, 304
 time table for 80
- Schiller test in cervical carcinoma 2553
- Schilling hemogram 3704
- Schlotz tonometer (Fig) 1545
- Schistosoma haematobium (Fig) 640
 morphology (Table) 3732
 japonicum morphology (Table) 3732
 life cycle 238
 mansonii in stool (Fig) 3731
 morphology (Table) 3732
- Schistosoma dermatitis, 3193

- Serum administration in intravenous drip 87
 albumin 81
 allergy ■■
 antibacterial list 84
 anti rhesus 1067
 antitoxic heterologous list 83
 atopy 518
 calcium disturbances 720
 chemistry 8
 (Table) 8
 convalescent in orchitis 2463
 in pityriasis rosea 3412
 desensitization technic, 87
 fractions 81
 heterologous antibacterial 84
 list 84
 antitoxic 83
 list 83
 homologous jaundice from 82
 list of 82
 reactions 80
 hyperimmune adult in pertussis 294
 immune list ■■
 injection 84
 intravenous administration continuous 87
 lipid disturbances 737
 phosphatase disturbances 729
 diff diag (Table) 728
 increased in hyperparathyroidism 1929
 test 1930
 potassium disturbances 730
 diag (Table) 731
 reactions allergic ■■ 548
 prevention 86
 treatment 87
 sensitivity tests 559
 in eye (Fig) 86
 sickness 548
 allergen in 553
 diff diag (Table) 192
 edema in 713
 lymphadenopathy in diff diag (Table)
 1137
 skeletal disorders in diff diag (Table) 2934
 in tetanus immunisation 298
 sodium disturbances 730
 therapy in anthrax 293
 in brucellosis 319
 evaluation ■■
 in dysentery 247
 evaluation 84
 in erysipelas 171 3276
 in erysipeloid evaluation ■■
 in influenza 287
 in lobar pneumonia evaluation 2184
 in measles 416
 in meningitis 215
 penicillin and 112
 in plague 322
 in pneumonia evaluation 2197
 in Rocky Mountain spotted fever 330
 evaluation 84
 in streptococcal infection 166
 in tuberculosis 267
 in tularemia, 325
 evaluation 84
 in typhus evaluation 84 374
 Seven-day fever 408
 Sex characteristics secondary time of develop-
 ment, 2728
 Sex, endocrinopathy and 1144
 in peripheral vascular disease (Table) 996
 Sexual behavior definition 1303
 disturbances 1303
 development abnormalities diff diag.
 (Table) 2480
 disturbances female diff diag (Table)
 2491
 male 2408
 diff diag (Table) 2409
 function definition 1304
 disturbances of definitions 1304
 glands, accessory anomalies, 2426
 instinct, Freud's interpretation 1344
 intercourse in female 2490
 in male 2401
 in pregnancy 2635
 maturity female 2481
 perversion 2412
 precocity diff diag (Table) 2480
 reproduction in bacteria 139
 retardation diff diag (Table) 2480
 S factor 631
 Shake solutions uses 3137
 Shaking palsy 1503
 Shampoo evaluation 3141
 Shaving preparations chemistry 3145
 Shellfish food elements of 642
 Shiga serum in bacillary dysentery 247
 Shigella flexner properties (Table) 226
 newcastle properties (Table) 226
 shiga, properties (Table) 226
 Shin fever 333 See also *Trench fever*
 Shingles 43a
 Shock, 9*8
 allergic 936
 due to injection 5774
 anaphylactic 549 936
 allergen in 553
 bath (Table) 3791
 in bladder injuries 2303
 burn 932
 causes (Table) 930
 centrifugal, 925
 due to circulatory disturbances 935
 clinical manifestations 931
 in coronary occlusion 945
 treatment 997
 edema, 12
 gravitation 925
 in hemorrhage 934
 hypoglycemic syncope of 9 6
 in hypotension diff diag (Table) 917
 in mercury poisoning 766
 in muscle injury 2957
 due to neurocirculatory disturbances 934
 organ allergic 547
 pleural 2034
 postoperative prevention 4005
 treatment 4007
 in pregnancy toxemia 936
 prevention 937
 speed 924 936
 temperature in 24
 spinal cord 1456
 syncope and 928
 traumatic 932
 treatment, 937
 in acute alcoholism 1396
 in pervers on neuroses 1350

- Seasickness prevention prescriptions 1487 3376
 Sebaceous adenoma pigmentation in diff
 diag (Table) 3156
 senile 3205
 cyst 3209
 diff diag (Table) 3254 3369
 of ear diff diag (Table) 3308
 excision technic 3035
 of face treatment technic 3208
 glands anatomy 3501
 mole 3205
 Seborrhea 3130
 alopecia and diff diag (Table) 3130
 diff diag (Table) 3255
 of scalp ointment prescription for 3137
 treatment 3131
 of vulva 3595
 yellow oxide of mercury in 3121
 Seborrheal alopecia 3411
 dermatitis 3132
 of axilla diff diag (Table) 3253
 of beard diff diag (Table) 3437
 of chest (Fig) 3125
 diff diag (Table) 3163 3269 3369 3432
 3433
 prescriptions for 3134
 sulfur ointment in 3129
 Eczema of face (Fig) 3123
 Keratosis 3217
 diff diag (Table) 6 3214 3309
 pigmentation in diff diag (Table) 3158
 Sebum function 3100
 Second sodium dosage pre-anesthetic 3013
 dosage (Table) 3337
 Secondary case definition 64
 hemolytic anemia 1061
 Secretin 1035
 test 1036
 Secretion stomach 1740
 Sedation in backward failure 949
 in coronary occlusion 939
 in hypertension 912
 in minor surgery 3050
 in shock prevention 959
 in weight loss 701
 Sedatives 3336
 asphyxia neonatorum and 2767
 cough 2059 2057
 gastric 1759
 for gastric neuroses 1775
 in glomerulonephritis acute 2379
 for hypno narcosis analysis dosage 1993
 in infancy dosage 2745
 for peptic ulcer 1791
 prescription 1727
 for seasickness 1487
 uterine prescription 2512
 Sedimentation rate of erythrocytes 3707
 in coronary occlusion 984
 in rheumatic myocarditis 1014
 in tuberculosis subclinical 259
 Sedlitz powder 1830
 Seizure diencephalic autonomic, 1400
 epileptic 1515
 hypoglycemic 1743
 Selenium poisoning clinical manifestations
 (Table) 753
 diagnosis (Table) 758
 occupations susceptible to (Table) 753
 treatment (Table) 758
 Sella turcica, x ray 1177
 Semen 2400
 abnormalities 2401
 examination 2400
 Semilunar cartilage of knee rupture diff diag
 (Table) 2810
 valve function 777
 Seminal tract (Fig) 2253
 Vesicles anatomy 2308 3638
 anomalies 2426
 calculi 2436
 tuberculosis 2468
 tumors 2445
 vesiculitis acute 2467
 chronic 2467
 vesiculography 2254
 Semmoma of testis 2443
 diff diag (Table) 2444
 (Fig) 2442
 Semple vaccine in hydrophobia 410
 Senescence febrile disorder in diff diag
 (Table) 980
 Senile alopecia 3411
 angioma 3207
 atrophy diff diag (Table) 3393
 cataract extraction 1558
 keratosis 3216
 diff diag (Table) 3383
 (Fig) 3201
 pigmentation in diff diag (Table) 3156
 psychosis 1382
 sebaceous adenoma 3205
 vulvovaginitis diff diag (Table) 3219
 wart 3217
 Senos 1823
 Sensitivity See also Allergy
 tests serum 86
 Sensory pathways 1474
 signs in peripheral nerve injuries, 1490
 Sepsis 10
 of newborn 2786
 diff diag (Table) 2761
 postganglionic 2157
 puerperal 2603
 rhinogenic 2131
 Septa definition 485
 Septal defect auricular signs (Table) 964
 interventricular 257
 electrocardiogram in (Fig) 293
 (Fig) 259
 ventricular signs (Table) 964
 Septic sore throat 125
 Septicemia fusosporothal 333
 after inflammation 19
 plague 322
 Serologic tests 56
 agglutination 56
 indications 56
 interpretation 58
 collection of blood for 56
 complement fixation, 57
 indications 57
 technic 57
 flocculation 534
 in infancy indications 2740
 precipitin 58
 significance 53
 (Table) 59
 Serous pericarditis 1003
 Serum administration, 31

- Skeletal system disturbances in infancy list, 2:59
- neurogenic, 2343
 - traumatic 2357
 - treatment methods 2803
 - infections, 2894
 - physical examination 3 62
 - traction, 2811
 - tumors See *Bone tumors*
- Skene's ducts anatomy 3614
- Skilful neglect ' 9753
- Skin. See also *Cutaneous*
- actinomycosis 490
 - allergy 3329
 - bacterial, 3352
 - clinical, 3329
 - diagnostic, 3329
 - anatomy 3128
 - diagram (Fig) 3500
 - an anesthetic magnesium sulfate as 613
 - antipruritics 3112
 - atrophy diff diag (Table) 3402
 - diffuse idiopathic 3386
 - bacteria 146
 - bactericidal activity 74
 - blastomycosis, 493
 - care of in infectious diseases 71
 - changes in peripheral vascular disease (Table) 998
 - chemical stains of diff diag (Table) 3154
 - color capillary circulation and 784
 - congenital diseases of 3145
 - depigmentation of diff diag (Table) 3404
 - diphtheria 307 See also *Diphtheria*
 - diseases congenital 3145
 - of infancy diff diag (Table) 3146
 - methods of diagnosis 3109
 - pharmacopoeia for 3112
 - disinfectants 3112
 - in endocarditis 10:3
 - eruptions febrile diff diag (Table) 175
 - in chickenpox (Fig) 421
 - maculopapular diff diag (Table) 412
 - in measles (Fig) 411
 - pustular diff diag (Table) 422
 - in Rocky Mountain spotted fever (Fig) 378
 - scarlatiniform diff diag (Table) 180
 - in smallpox (Fig) 424
 - in sulfathiazole therapy (Fig) 90
 - vesicular diff diag (Table) 42
 - erythema, diff diag (Table) 180
 - fungous infections of 489
 - genital dermatoses of diff diag (Table) 290
 - glands function 3100
 - in hyperthyroidism, 1205
 - in infancy examination 2733
 - in infection 3245 3293
 - inflammation See *Dermatitis*
 - irritants 3112
 - lesions edema in 715
 - in diabetes mellitus 1248
 - types 3103
 - leukemic infiltrations of 3387
 - neuritic atrophy 3 29
 - neurogenic disturbances 3227
 - in newborn care 2749
 - nutrition, arsenic for 126
 - pathology 3101
 - perineal dermatoses of diff diag (Table) 290
 - skin physical examination, 3498
 - physiology 3100
 - pigmentations of diff diag (Table) 3154 3242
 - protectives, 3112
 - pustules diff diag (Table) 402
 - rash See *Skin eruptions*
 - reactions caused by drugs 3339
 - in glanders 3273
 - in scarlet fever 164
 - types, 3101
 - segment excision, technic 3935
 - temperature, capillary circulation and 784
 - tests allergy 550
 - (Fig) 555 658
 - in brucellosis 317
 - (Fig) 318
 - in chancre, 259
 - diagnostic, 61 3329 3330
 - (Table) 59
 - in infancy indications 2738
 - in pertussis, 281
 - significance 55
 - texture fever and 25
 - traction, 2811
 - triple response of 785
 - tumors of 3199
 - benign, 3199
 - in malignant 3417
 - metastatic 3207
 - ulcers tyrothricin in 105
 - vascular lesions of 3934
 - vesicles diff diag (Table) 422
 - in vitamin A deficiency 619
 - white reaction of 785

Skin toning lotions evaluation 3159

Skull See also *Head*

 - diagnostic roentgenography 3741
 - fractures 1430
 - aural discharge in diff diag (Table) 2150
 - radiography 1423
 - types 1450
 - geographical map 1450
 - median section (Fig) 3505
 - radiography 2019
 - in infancy indications for 2737
 - vault of 3503

Sleep 1304

 - hypnotic definition 1303
 - lack of See *Insomnia*
 - prolonged definition 1307
 - ratio inversion of 1307

Sleeping sickness, diff diag (Table) 1308

Sleeping sickness 441 See also *Epidemic encephalitis*

 - African, 531 See also *Trypanosomiasis*

Slender body type characteristics 3488

Slit lamp examination 1544

 - (Fig) 1544

SMA composition 636

Smallpox 424

 - animal inoculation in (Table) 69
 - diff diag 427
 - (Table) 174 4 2
 - (Fig) 424
 - immunity after 78
 - quarantine data on (Table) 67
 - rash in diff diag (Table) 172
 - symptoms other than rash in, diff diag (Table) 2790

- Shock {treatment in psychoses 1372
in psychotherapy 1329
in schizophrenia 1368
valvular defect predisposing to 972
vascular failure in (Table) 929
due to venom 936
- Shoe corrective (Fig) 3082 3093 3084
ideal (Fig) 3081 3092
sterilization 3508
- Shoulder deformities diff diag (Table) 2954
dislocation 2971
 intraclavicular (Fig) 2972
 recurrent 2974
 subclavicular (Fig) 2972
 subcoracoid 2972
 subspinous (Fig) 2972
 treatment (Table) 2971
 examination (Table) 3574
 frozen 2896
 in hyperthyroidism 1205
 girdle fractures signs (Table) 3014
 treatment (Table) 3014
 joint capsule rupture 2959
 painless swellings of diff diag (Table) 2954
 round exercises for 3780
- Shoulderstrap resonance 3530 3536
- Sialography 1638
- Sick room in infectious diseases 68
- Sickle cell anemia 1063
 diff diag (Table) 1060
 (Fig) 3704
 detection 3704
- Sicklemia, asymptomatic 1066
- Siderosis bulbi 1558
- Side-wheel gait diff diag (Table) 3497
- Sigmoidoscopy 1907
- Signet ring cells in Krukenberg tumor 2572
 in gallbladder x ray 1938
 stone 1937
 (Fig) 1939
- Silicosis (Fig) 2003
 manifestations (Table) 2005
- Silver 134
 arsphenamine absorption 120
 administration 117
 distribution 120
 dosage 119
 efficacy (Table) 124
 excretion 120
 lactate 134
 nitrate 134
 application 1554
 in cystitis 2345
 in ophthalmia prevention, 222
 pencil in granulation 3138
 in skin diseases 3127
 in vulvovaginitis 2501
- Silver nitrate 134
 poisoning clinical manifestations (Table) 759
 diagnosis (Table) 758
 occupations susceptible to (Table) 758
 treatment (Table) 759
 preparations colloidal action 134
 uses 136
 in respiratory disturbances dosage 2029
 protein dosage (Table) 135
 uses (Table) 135
 proteinate in ophthalmia prevention 222
 skin reactions caused by 3340
- Salvot in skin diseases 3127
- Simmonds disease 1169
 diff diag 1173
 differentiation from Addison's disease 1173
 differentiation from anorexia nervosa, 1174
 (Fig) 1171
 gravitation shock in 925
- Simpson's forceps (Fig) 2695
- Simulium vector of onchocerciasis 3327
- Singultus definition 1772
 diff diag (Table) 1933
- Sinus(es) anatomy 1446
 arrest 378
 electrocardiographic diagnosis 810
 arrhythmia 377
 electrocardiographic diagnosis 810
 bradycardia 376
 electrocardiographic diagnosis 810
 carotid syncope of 922
 contractions premature 337
 infection See Sinusitis
 maxillary cysts 2136
 irrigation, 2023
 nasal See Nasal sinuses
 paranasal frontal section (Fig) 2043
 phlebitis otogenic, 2146
 rhythm digitalis in 951
 restoration in coronary occlusion 987
 tachycardia, 374
 electrocardiographic diagnosis, 810
 thrombosis 1447
 cavernous rhinogenic 2130
 fever in diff diag (Table) 1007
 masking of by sulfonamide therapy 93
 transillumination 3595
- Sinusitis complicating scarlet fever 179
 ethmoid acute 2125
 frontal acute 2126
 maxillary acute 2125
 paranasal acute 2124
 allergic 2101
 chronic 2131
 complication 2135
 diagnosis 2134
 treatment 2136
 purulent maxillary tyrothricin in 106
 sphenoid acute 2126
- Sippy diet 666
 powders 1704
- Sitz bath (Table) 3791
- Sixth disease 419
 diff diag (Table) 174
 rash in diff diag (Table) 172
 symptoms other than rash in diff diag (Table) 2790
- Size decrease in diff diag (Table) 604
- Sjögren syndrome 1669
- Skeletal changes due to hyperparathyroidism 1225
 in Fehrlitz's syndrome 1167
 disorders febrile diff diag (Table) 192
 pain in, left lower quadrant diff diag 1866
 in right lower quadrant diff diag (Table) 1861
 phosphatase activity in diff diag (Table) 725
 pain diff diag (Table) 892
 system 2793
 congenital abnormalities 2816
 disturbances diff diag list, 2804

- Spasm diff diag (Table) 238^o
 of sphincter of Oddi 2007
 umbilical pain in, diff diag (Table) 1837
- Spasmodic croup diff diag (Table) 2732
- Spastic diplegia, 1433
 after asphyxia neonatorum 2^o 63
 hemiplegia (Fig) 2919
 paralysis 2918
- Spasticity diff diag (Table) 3197
 in infancy causes (Table) 2737
- Specialist certification 4037
 consultation, 3599
 abuse 3653
 indications for 3650
 list, 3900
 local vs. distant 3632
 mandatory 3654
 specific indications list, 3654
 qualifications 3651
- Speech, definition, 1310
 disturbances definitions, 1310
 diff diag (Table) 3336
- Speed shock, 924 936 3774
 temperature in 24
- Spermatic cord anatomy 2327 3633
 anomalies, 2426
 contusions 2428
 hydrocele 2430
 relation to urinary system (Fig) 3637
 swellings diff diag (Table) 3092
- Spermatocele 2433
 differentiation from hydrocele 2438
 (Fig) 2435
- Spermatogenesis 2399
 disturbances 2408
 imperfect, gonadotropin in 2419
- Spermatorrhea, definition, 1304
- Spermatozoa (Fig) 2400
 structure (Fig) 2399
- Spermicidal jellies 2303
 with vaginal diaphragm 2503
 application (Fig) 2504
- Sphenoidotomy indications for 3904
- Sphenoid irrigation, 2023
- Sinuses anatomy 3593
 sinusitis 4126
- Sphenopalatine ganglion, cocainization in, 1433
 neuralgia, Slader 1482
- Spherocytosis familial, 1061
- Sphincter of Oddi spasm, 2007
- Sphygmomanometer use of 3486
- Spica plaster f r hip 2927
- Spider bites, 3197
 shock due to 9 6
 nevus, 3203
- Spina bifida, 1411 2820
 diff diag (Table) 3369
 (Fig) 1412
 swellings of back in, diff diag (Table) 2822
- Spinal accessory nerve paralysis 1489
 anesthesia, 32 2
 dangers in, 3923
 (Fig) 3918
 shock from 935
 technic 3922
 artery occlusion, 1419
 ataxia, 1415
 concussion, 1436
 cord, abscess, 1469
- Spinal cord aneurysm, 1419
 anomalies 1411
 arteriosclerosis, 1443
 circulation, 1419
 compression, 1457
 in atlas dislocation 2909
 contusions 1456
 disturbances, diff diag (Table) 1432
 hemorrhage, 1419
 infection, diff diag (Table) 1461
 injuries 1456
 in infancy 2777
 pathways anatomy 1389
 transection 1457
 transportation in, 1457
 tumors 1430
 diff diag (Table) 14 2
 (Fig) 1431
 drainage in poliomyelitis 464
 fluid See Cerebrospinal fl uid
 meninges, hemorrhagic lesions 1453
 myosis 1400
 nerves anatomy 1472
 poliomyelitis 460
 puncture equipment, 3781
 technic 3781
 (Fig) 3781 378^o
- Spindle-cell sarcoma (Fig) 575
- Spine articular facets of fractures 3010
- blastomycosis of (Fig) 494
- cervical, dislocation 2968
 traction in (Fig) 3007
 treatment (Table) 2963
 disturbances, diff diag (Table) 2318
 fracture 3003
 treatment (Table) 3004
 synostosis 2317
 diff diag (Table) 2^o 99
- dislocations, 2968
 clinical manifestations (Table) 2963
 treatment (Table) 2963
- dorsal, dislocation of 2970
 treatment (Table) 2963
 fracture 3009
 treatment (Table) 3004
- examination, 3570
 fracture 1458 3003
 first aid in 3005
 transportation in 3005
 treatment (Table) 3004
- lumbar dislocation of 2970
 treatment (Table) 2963
 fracture 3009
 treatment (Table) 3004
- Marie-Strümpell (Fig) 2915
- movements examination, 3572
- osteo-arthritis 2859
 diff diag (Table) 694
 pain in diff diag (Table) 2940
- osteoporosis of pain in diff diag (Table) 2940
- palpation, 3572
- radiography in infancy indications 2737
- subluxation of axis (Table) 2963
 treatment (Table) 2963
- tibial, fracture treatment (Table) 3033
- tuberculosis 2942
 diff diag (Table) 694
 (Fig) 2943
- Spinous processes, fracture 3009

- Smallpox vaccination 427
vaccine administration (Table) 79 80
in leprosy 277
Smears diagnosis by 43
(Table) 50
in fungi infections 488
in gonorrhea technic 219
in malaria 316
stained 43
in infancy indications 2739
technic 52
of urinary sediment 3690
vaginal 2495
Smell disturbances diff diag (Table) 2120
Smith pessar 2510
Smoking 3884
conditions possibly influenced by 3885
contraindication in leukoplakia buccalis 3213
during treatment for syphilis 349
effects of 3883
in Haynaud's disease 1002
in tuberculosis 269
Smooth bacterial growth 141
muscle depressants 3892
stimulants 3890
SN 7018 522
SN 18 276 522
Snake bite 3196
shock due to 936
treatment 3197 3970
venom in acute hemorrhage 1039
in essential thrombocytopenia 1110
in hemorrhagic telangiectasia, 1120
moccasin in telangiectasis 3 03
Snapping hip 2963
Sneezing diff diag (Table) 2064
Snellen visual acuity test 153
Snow blindness 1530
Soap green uses 3136
hard chemistry 3142
shampoos 3141
soft 3136
substitutes evaluation 3135
uses 3127
Soapless shampoos evaluation 3141
Sobusminol dosage (Table) 123
in lupus erythematosus dosage 3390
Sodium in Addison's disease 398
administration 699
alarate dosage (Table) 2936
amylal dosage (Table) 2936
sedation in tetanus 299
bicarbonate as antacid 1755
as cathartic 1830
in pruritus 3127
as urinary antiseptic 2256
borate uses 3128
bromide dosage (Table) 3836
in infancy dosage 2745
sedation in tetanus 299
-chloral prescription 1487
and calcium propionate 3307
chloride in Addison's disease 1277
restriction, in diabetes insipidus 1184
therapeutics 3823
citrate, iron and do age (Table) 1018
cyanide poisoning diff diag (Table) 240
dehydrocholate dosage (Table) 1043
diet low in 682
in Ménière's disease 1466
Sodium fluoride poisoning diff diag (Table) 240
formaldehyde sulfoxylate dosage 2743
in mercury poisoning dosage 767
lactate in shock prevention 938
d-lactate test 1950
metabolism 597
disturbances in 730
mouthwath injection in cavernous angioma, 3202
in hydrocele dosage 2433
acetate 626
nitrate 3892
pentobarbital in infancy dosage 2745
pentothal sedation in tetanus 299
perborate in Vincent's infection 3125
phenobarbital in infancy dosage 2745
phosphate cathartic 1830
propionate in skin diseases 3128
salicylate dosage (Table) 3832
in infancy dosage 2742
in rheumatic fever dosage 195 108
second in coronary occlusion 990
in serum (Table) 5
sources, 597
sulfadiazine in cholera, 251
in meningitis dosage 216
in pneumococcal infection 206
sulfate cathartic 1830
thiosulfate dosage in exfoliative dermatitis 3341
in skin diseases 3128
water metabolism and 697
Sodoku 363 See also *flat bits fever* *Waterhill fever*
Sodomy 2412
Solar dermatitis 3174
diff diag (Table) 429
pigmentation in diff diag (Table) 3156
rash in diff diag (Table) 3290
Soldatenfieber 480
Soldier's heart 897
Solganol B in rheumatoid arthritis 20 2
Sofutibosan in leishmaniasis 535
Somnambulism definition 1309
Somnolence diff diag (Table) 1303
treatment 1307
Sonne dysentery 244
Soot carcinogenic 2915
Sopronal 3307
Sorbitol as diuretic 2260
Sore throat diff diag (Table) 2071 2732
Sounds heart normal diff diag (Table) 278
(Fig) 803
Soups composition (Table) 652
energy value of (Table) 652
food value of 650
South American trypanosomiasis 531
Soy bean lecithin in priapism dosage 3191
muffins recipe for 678
Spa therapy 2764
in arteriosclerosis 980
in backward failure 947
in hypertension 913
in osteo-arthritis 2861
in rheumatoid arthritis 2019
Spasm abdominal in infancy diff diag
(Table) 2730
cholinergic drugs in 3876
of diaphragm 2094

- Staphylococemia metastases in** 163
 rash in diff diag (Table) 3290
Staphylococcus antitoxin evaluation 33 167
 aureus cause of furuncle 3243
 colony in 139
 sulfathiazole sensitivity 2356
 bacteriophage evaluation 157
 epididymitis due to 2461
 food poisoning animal inoculation in (Table) 62
 diff diag (Table) 240
 immunity to 11
 infection 151
 antitoxin in 157
 culture in (Table) 64
 cutaneous manifestation 3246
 diagnosis 153
 by smear 51
 endocarditis in (Table) 954
 of eye 1601
 conjunctivitis 160
 fever in diff diag (Table) 1006
 manifestations 152
 methods of diagnosis 3246
 penicillin in evaluation 111
 respiratory signs in diff diag (Table) 2106
 streptomycin in evaluation, 111
 sulfonamides in evaluation 91
 surgery in 166
 treatment 154
 pneumonitis 2190
 toxin 151
 toxoid evaluation 78 157
 in eye diseases 1551
 vaccine evaluation 78
 virulence 152
Starch bath in dermatitis 3333
 lotion compound prescription 3132
 in pruritus 3128
 source 598
Starling's law of heart 780
Starvation acidosis in diff diag (Table) 721
 basal metabolism in diff diag (Table) 719
 fever in diff diag (Table) 718
 metabolism in 684
Statistical data in physical examination 3478
Statistics prognosis and 40 7
Status anginosus 891
 paravertebral nerve block for 833
 asthmatics electrocardiographic changes in 808
 (Fig) 823
 dysrhythmic 1605
 epilepticus 1516
 thymicolymphaticus 1235
Stave fracture of thumb 5035
Steam inhalation in pertussis 284
 in rhinitis 20.8 2116
Steatocystoma multiplex 3207
 diff diag (Table) 3211 3369
 pigmentation in diff diag (Table) 3166
Stomatitis congenital 1937
 examination for 1938
 idiopathic 1938
 diff diag (Table) 728
Stomach operation 2407
 in impotence 2410
Stellwag's sign in hyperthyroidism 1203
Stem vegetables food value of 645
Stems cervical 2506
Stenosis aortic, blood pressure in (Table) 971
 causes (Table) 971
 diff diag (Table) 994
 electrocardiogram in (Table) 971
 prognosis in (Table) 974
 signs (Table) 971
Strabismic, blood pressure in (Table) 970
 causes (Table) 970
 electrocardiogram in (Fig) 801 824 826
 842 845 845 970
 (Fig) 970
 prognosis (Table) 974
 quinidine in 862
 right heart failure from 942
 signs (Table) 970
 stethogram of (Fig) 801
pulmonary blood pressure in (Table) 971
 cause (Table) 971
 diff diag (Table) 868
 electrocardiogram in (Table) 971
 isolated 961
 prognosis (Table) 974
 right heart failure from 942
 signs (Table) 964 971
pyloric 1797
 abdominal pain and diff diag (Table) 2790
 in infancy peristaltic waves in (Fig) 2735
subaortic 939
 diff diag (Table) 868 910
 signs (Table) 964
tricuspid blood pressure in (Table) 970
 cause (Table) 970
 electrocardiogram in (Table) 970
 prognosis (Table) 974
 signs (Table) 970
Steppage gait diff diag (Table) 3497
Stereocamperimeter 1543
Stereotype definition 1309
Stenility 2418 See also *Infertility*
 after epididymitis 2461
 examination for 2400
 faulty posture and 2058
 male obstructive 2420
 relative 2420
Sterilization by boiling 3911
 chemical 3911
 dry 3911
 female surgical 2508
 of footwear 3308
 male 2407
 of surgical material 3910
Sternal puncture in infancy and children 2739
Sternoclavicular dislocation 2974
 treatment (Table) 2971
Sternocleidomastoid muscle hematoma of 9775
Sternum fracture of treatment (Table) 9005
Sternotomy See Sucking
Sternutators poisoning by 745
Steroid hormones 2513
Sterols 595
 in tetany 727
Stertor diff diag (Table) 2178
Stethogram normal, 111
Stethoscope types 3537

- Spirilla description 137
 infection 354
 spirillum fever 357
 obstruction 357
 Spirochaetaceae taxonomic key to 329
 Spirochetal infection 329
 diff diag (Table) 192
 fever in (Table) 26
 ocular manifestations 1605
 pencil in evaluation 111
 pneumonia 2192
 pulmonary diff diag (Table) 405
 skeletal disorders in diff diag (Table) 2834
 Spirochetes causing disease 39
 darkfield examination of (Fig) 46
 effect of sulfonamides on 92
 in jaundice 363
 Spirometer 3739
 Splanchicectomy gravitation shock in 325
 indications for 3994
 Splanchnomacra, 1157
 Spleen abscess 1132
 anatomy 3559
 anomalies 1126
 in blood dyscrasias 1132
 congestion 1130
 cyst 1132
 cytology of 1035
 diseases 1128
 disturbances 1128
 abdominal rigidity in diff diag (Table) 1747
 in endocarditis 1029 1092
 enlargement diff diag (Table) 1129
 hemorrhagic disease and 1110
 infarcts 1130
 in infections 1131
 in metabolic disorders 1132
 movable 1128
 palpation 3566
 physiology 1036
 in Rocky Mountain spotted fever 372
 rupture 1129
 in tsutsugamushi fever 383
 tumors 1132
 in typhoid fever 229
 vascular disturbances 1130
 Splenectomy 1033
 in Banti's syndrome 1131
 in essential thrombocytopenia 1116
 in hemolytic icterus 1063
 indications for 1033 3994
 in sickle cell anemia 1066
 Splenic anemia 1131
 vein thrombosis of 1130
 Splenomegaly chronic congestive 1131 1976
 diff diag (Table) 1129
 in endocarditis 1022
 in granuloma fungoides 3367
 large cell, 1133
 in malaria, 509
 thrombocytopenia and 1117
 tropical, 534
 Splint airplane (Fig) 3019
 Bohler 3017
 elbow (Fig) 2994 2995
 for fractured finger (Fig) 2939
 forearm (Fig) 2901
 radius (Fig) 2901
 Splint Keller Blake (Fig) 3001
 Murray-Jones (Fig) 3001
 plaster unpadded 2992
 removable 2991
 Thomas (Fig) 2992
 unpadded application 2935
 Splinter hemorrhage in endocarditis 1023
 Splinters 3983
 Split papules 3281
 personality definition 1299
 Spondylitis ankylosing 2915
 (Fig) 2915
 deformans of spine 2859
 Spondylothesis 2970
 (Fig) 2970
 manifestations and treatment (Table) 2963
 Spontaneous abortion causes 2650
 Spoon nails 3458
 (Fig) 3452
 Spore bacterial 138
 definition 485
 formation bacterial 141
 stain technic 62
 Sporotrichosis 435 3311
 (Fig) 3312
 serologic test in (Table) 60
 skin test in (Table) 60
 Sporotrichum diff diag (Table) 437
 schenku 3311
 Sporulation bacterial 141
 Spot localization in lung abscess 2216
 Sprain back acute low 3063
 sacro-lumbar 2893
 treatment 3965
 Sprengel's deformity 2823
 diff diag (Table) 2954
 (Fig) 2823
 Spruner's fracture 2033 3012
 Sprue in newborns diff diag (Table) 1782
 nontropical 1084 1038
 oral 1676
 tropical 1034
 Sputum in acute pneumonia 2191
 in bronchiectasis appearance 2060
 in chronic bronchitis 2169
 collection 53 3719
 examination, 3719
 macroscopic (Table) 3720
 microscopic (Table) 3720
 special methods (Table) 3720
 in galloping consumption 2190
 in lobar pneumonia 2173
 pneumococcal typing of 201
 in tuberculosis subclinical 259
 tuberculous (Fig) 3719
 in tuberculous pneumonia 2203
 Squamous cell carcinoma of uterus 2363
 epithelioma 3223
 diff diag (Table) 3715
 (Fig) 3220
 of lid (Table) 1566
 Squint See Strabismus
 Stain Gram's technic 52
 Wright's, technic, 3699
 Staining solutions for 43
 technic, 52
 Stammering definition, 1510
 Standard test meals 3721
 Staphylococemia, 153
 diff diag (Table) 422

- Staphylococccemia, metastases in** 153
 rash in diff diag (Table) 3290
Staphylococcus antitoxin evaluation 83 157
 aureus cause of furuncle 3243
 colony in 139
 sulfathiazole against 2356
 bacteriophage evaluation 157
 epididymitis due to 2461
 food poisoning animal inoculation in (Table)
 diff diag (Table) 240
 immunity to 15
 infection, 151
 antitoxin in 167
 culture in (Table) 111
 cutaneous manifestation, 3246
 diagnosis 153
 by smear 31
 endocarditis in (Table) 951
 of eye 1601
 conjunctivitis 1629
 fever in diff diag (Table) 1006
 manifestations 152
 methods of diagnosis 3246
 penicillin in evaluation 111
 respiratory signs in diff diag (Table)
 2106
 streptomycin in evaluation 111
 sulfonamides in evaluation 91
 surgery in 156
 treatment 154
 pneumoitis 2190
 toxin 151
 to aid evaluation 78 157
 in eye diseases 1 51
 vaccine evaluation 78
 virulence 152
Starch bath in dermatitis 3333
 lotion compound prescription 3132
 in pruritus 3128
 source 333
Starling's law of heart 780
Starvation acidosis in diff diag (Table) 791
 basal metabolism in diff diag (Table) 719
 fever in diff diag (Table) 718
 metabolism in 384
Statistical data in physical examination 3478
Statistics prognos is and 4027
Status anginosus 891
 paravertebral nerve block for 853
 asthmatic electrocardiographic changes
 in 809
 (Fig) 8 3
 dysrhythmic 1505
 epilepticus 1516
 thymolymphaticus 1 35
Stave fracture of thumb 303
Steam inhalation in pertussis 284
 in rhinitis 2028 116
Steatocystoma multiplex 3207
 diff diag (Table) 3211 3369
 pigmentation in diff diag (Table) 3156
Stenorrhoea co genital 1037
 examination for 1938
 idiopathic 1938
 diff diag (Table) 728
Steer horn stomach 3500
 (Fig) 1741
Steinach's operation 2407
 in impotence 2410
Stellwag's sign in hyperthyroidism 1203
Stem vegetables food value of 645
Stems cervical 2506
Stenosis aortic, blood pressure in (Table)
 971
 causes (Table) 971
 diff diag (Table) 994
 electrocardiogram in (Table) 971
 prognosis in (Table) 974
 signs (Table) 971
Mitral, 956
 blood pressure in (Table) 970
 causes (Table) 970
 electrocardiogram in (Fig) 801 824 826
 81 843 845 970
 (Table) 970
 prognosis (Table) 974
 quinidine in 862
 right heart failure from 942
 signs (Table) 970
 stethogram of (Fig) 801
 pulmonary blood pressure in (Table) 9 1
 cause (Table) 971
 diff diag (Table) 868
 electrocardiogram in (Table) 971
 isolated 961
 prognosis (Table) 974
 right heart failure from 942
 signs (Table) 964 971
pyloric 1797
 abdominal pain and diff diag (Table)
 2730
 in infancy peristaltic waves in (Fig) 2735
subaortic 959
 diff diag (Table) 868 910
 signs (Table) 964
 tricuspid blood pressure in (Table) 970
 cause (Table) 970
 electrocardiogram in (Table) 970
 prognosis (Table) 974
 signs (Table) 970
Steppage gait diff diag (Table) 3497
Stereocampimeter 1843
Stereotypy definition 1309
Sterility 2418 See also *Infertility*
 after epididymitis 2461
 examination for 2409
 faulty posture and 3058
 male obstructive 2420
 relative 24 0
Sterilization by boiling 3911
 chemical 3911
 dry 3911
 of male surgical 2508
 of footwear 3308
 male 2407
 of surgical material 3910
Sternal puncture in infancy indications 2739
Sternoclavicular dislocation 2974
 treatment (Table) 2971
Sternocleidomastoid muscle hematoma of 2775
Sternum fracture of treatment (Table) 3005
Sternutation See *Sneezing*
Sternutators poisoning by 745
Steroid hormones 2513
Sterols 695
 in tetany 727
Stertor diff diag (Table) 2168
Stethogram normal 802
Stethoscope types 3537

- Subamine glucoside in leishmaniasis dosage 3319
 methionate in leishmaniasis 535 5390
 Stibophen in leishmaniasis 531
 in schistosomiasis 538
 Stilbamidine in multiple myeloma 1127
 Stilbestrol dosage (Table) 2515
 in gonorrheal vulvovaginitis dosage 2588
 in hypogonadism dosage 2595
 in menopausal syndrome 2526
 in suppression of lactation 2719
 Still's disease 2916
 Stillbirth in diabetes 1260 2778
 in eclampsia 2641
 syphilitic 2671 2787
 Stilling charts for color sense tests 1541
 Stimulants of central nervous system 3865
 of smooth muscle 3590
 Stokes cramps hyponatremia in diff diag (Table) 729
 Stokes Adams syndrome 879 See also *Heart block*
 stethoscope in 924
 Stoma closure of diet in 680
 colonic diet in 690
 Stomach See also *Gastric* and *Gastro-intestinal*
 adenocarcinoma (Fig) 1815
 anatomy 3500
 atony definition 1760
 bacteriology 1743
 carcinoma 1814
 (Figs) 1815 1818
 pernicious anemia and 1081
 cascade 1805 (Fig) 1805
 congestion chronic 1702
 content See *Gastric contents*
 dilatation 1807
 definition, 1760
 disturbances glossary 1768
 medication for 1753
 stool examination in 1744
 examination special methods 1743
 fish hook type 3560
 (Fig) 1749
 fluoroscopy 1744
 foreign bodies in 1807
 (Fig) 1807
 hypersthenic (Fig) 1741
 inflammation See *Gastritis*
 innervation 1743
 lavage 1749 1751
 leather bottle 1814
 lesions local 1797
 postoperative diet in 686
 preoperative diet in 685
 lymphosarcoma (Fig) 1817
 motor function 1741
 myosarcoma 1819
 neuroses See *Gastric neuroses*
 operations for 1758
 postoperative measures 1760
 preoperative care 1753
 pain in diff diag (Table) 1789
 physiology 1740
 polyps, 1806
 (Fig) 1813
 powdered dosage (Table) 1048
 radiography 1744
 secretion 1740
 steer horn (Fig) 174
 stomach steer horn type 3560
 stenosis pyloric 1797
 (Fig) 1798
 treatment special methods 1749
 tube in infancy indications for 2737
 types 1750
 tumors 1814
 benign 1814
 diff diag (Table) 1814
 malignant 1814
 ulcer 1763 1780
 (Fig) 1782
 vascular disturbances 1762
 Stomachics 1756
 in weight loss 701
 Stomatitis 434
 actinomycotic 1607
 aphthous 434 1695
 (Fig) 1696
 Bednar 1690
 catarrhal 1681
 fusospirochetal 1693
 gonorrheal 1696
 infectious 1695
 in mercury poisoning 760
 nonspecific 1694
 traumatic 1690
 Stomoxysidae as vector (Table) 49
 Stone See *Calculus*
 Stool abnormalities of See *Diarrhea Constipation*
 appearance in intestinal neuroses 1847
 cultures in bacillary dysentery 245
 in milky tuberculosis 261
 in typhoid fever 233
 examination in amebiasis 520
 chemical 3728
 in infancy indications 2730
 macroscopic (Table) 3728
 microscopic 3729
 (Fig) 3730
 occult blood 3728
 routine 3727
 wet smears 3730
 fatty acids in 3729
 incontinence diff diag (Table) 1018
 normal 3747
 ova in (Figs) 3731
 (Table) 3739
 tarry diff diag (Table) 1813
 Strabismus concomitant See *Strabismus non paralytic*
 double vision in diff diag (Table) 1598
 internal in Craden's syndrome 1617
 latent 1529
 nonparalytic diff diag (Table) 1531
 mechanism 1529
 paralytic diff diag (Table) 1531
 mechanism 1529
 treatment 1530
 varieties (Table) 1531
 Strains postural 3067
 chronic 3071
 Stramonium 3375
 Strangury diff diag (Table) 235
 Strapping in low back sprain 3068
 (Fig) 3069
 in rupture of muscles and tendons 2938
 in weak foot 3080
 (Fig) 3079

- Strawberry gallbladder 200.**
 pathology 1927
 mark 3200
 (Fig) 3200
 tongue 178 (Fig) 177
Streptobacillus moniliformis 361 363
Streptococcal conjunctivitis 16 ■
 eye infections 169²
 pneumonitis, 2190
 sore throat, diff diag (Table) 3600
Streptococemia, 163
 diff diag (Table) 3398
 eruption in diff diag (Table) 3163
Streptococcus allergy 163
 antibody response 161
 antitoxin, scarlet fever evaluation 83
 bacteriology 157
 epididymitis due to 2161
 faecalis sulfathiazole against 2356
 food poisoning diff diag (Table) 240
 hemolytic, biochemical classification (Table) 111
 colony in, 139
 epidemiology 159 161
 infections glomerulonephritis after 2374
 scrofula gangrene due to 2160
 serologic classification (Table) 160
immunity 161
infections 157
 airborne control of 167
 culture in (Table) 54
 cutaneous manifestations (Table) 3246
 diagnosis 164
 by smear in (Table) 51
 endocarditis in (Table) 954
 fever in, diff diag (Table) 1006
 in focal nephritis 2366
 local, 16²
 methods of diagnosis (Table) 3246
 penicillin in evaluation 111
 prevention 166
 primary 162
 respiratory signs in diff diag (Table) 2106
 secondary 162
 streptomycin in evaluation 111
 sulfonamide in evaluation 9²
 treatment 165
specificity of 159
toxemia, 16²
toxin production 159
typing 159
virulence mechanism 145
Streptolysin = streptococci 159
Streptomycin 103
 absorption, 104
 aerosolization 2041
 antibiotic activity 104
 in bacillary dysentery 217
 in cholera 951
 in colon bacillus infections 219
 in dysentery 217
 excretion 104
 in eye diseases 1553
 in influenzal meningitis, 989
 in Klebsiella infections 323
 in leprosy 977
 oral dosage 105
 penicillin and, indications 113
 in pertussis 284
 preparations 164
Streptomycin in pyrophlebitis, 1961
 in pyocyanus infections, 3 3
 in synergistic action 94
 therapy desperation 114
 probatory 114
 status 111
 toxicity 105
 in tuberculosis 267
 in tularemia, 326
Streptothricosis 439 See also *Actinomycosis*
Striae diff diag (Table) 3104
 gravidarum 2623
 purple in Cushing's syndrome 1162
Striated muscle drugs acting on, 3858
Stridor diff diag (Table) 2166
 in infancy diff diag (Table) 275
 laryngeal (Table) 2043
String galvanometer description 80²
 sign (Fig) 1854
Stroke 1432
 beat, temperature in, 23
 volume of heart, 760
Strongyloides stercoralis 1902
Strongyloidiasis 1905
Struma lymphomatosa, 1222
Strumitis 12²
Strychnine 3868
 effect on muscle 3888
 in infancy dosage 2744
 pharmacology 3869
 poisoning 3869
 treatment 3869
 therapeutics, 3869
Stupor definition, 1295
Stuttering definition, 1310
Stye 1610
 treatment 1610
 ■ type of bacterial growth 141
Subacidity definition 1769
Subaortic stenosis 959
 diff diag (Table) 868 910
 signs (Table) 964
Subarachnoid block anesthesia 302²
 hemorrhage 1445 1454
 diff diag (Table) 1437
 fontan lies in diff diag (Table) 27 9
 space Lipodol injection in (Fig) 3075
Subcortical hemorrhage 1454
Subcutaneous immunization, 80
 injection, 37 0
 of soluble sulfonamides ■
Subdeltoid burnitis 2904
 lavage 2904
Subdiaphragmatic See Subphrenic
Subdural abscess 1468
 hematoma, chronic 1454
 hemorrhage 1453
 in infancy 975
 hygroma, 1454
 tap in infancy indications 2738
Subluxation, 2964 See also *Dislocation of spine manifestations (Table) 2965*
 treatment (Table) 2965
Subphrenic abscess 1928
Substitution therapy in allergy 563
Subungual hematoma, 3453
 hyperkeratosis 3457
Succinimide mercury description, 151
Succinylsulfathiazole chemical structure (Fig) 89

- Succorhea definition 1769
 Succussion sounds 3540
 diff diag (Table) 3543
 Sucking wound of chest treatment 3957
 Sucrose as diuretic dosage 2260
 in digestion 588
 in encephalopathies, 1501
 source 588
 Sucrosuria diff diag (Table) 3677
 Suction apparatus in intestinal distention, 4011
 Sudamen 3169
 diff diag (Table) 423 3360
 Sugar 591
 blood See also *Hypoglycemia Hyperglycemia*
 (Fig) 3715 3716
 in infant feeding formula 2782
 injection in hypertensive encephalopathy 916
 of lead as astringent evaluation 3121
 metabolism 591
 test in cerebrospinal fluid 3736
 therapeutics 591
 tolerance test 1250
 in urine See *Glycosuria*
 Suicide 1362
 Sulamid in urinary infections 2356
 Sulfus in muscular injury 2957 2959
 Sulfadiazine in arthritis 2910
 in bacillary dysentery 247
 in chancroid prophylaxis 291
 chemical structure (Fig) 89
 in common cold dosage 392 394
 evaluation 2116
 evaluation (Table) 97
 in fracture (Table) 2985
 in gas gangrene 301
 in gonorrhea 229
 prevention 222
 in gynecologic infections dosage 2 85
 in lobar pneumonia 2184
 in lymphopathia venereum 473
 in meningitis 216
 in minor surgery 3913
 in osteomyelitis 2936
 in pneumococcal infection, 206
 in pyelitis 2356
 in rheumatic fever 198
 in skin diseases evaluation 3128
 skin reactions caused by 3340
 in staphylococcal infections 154
 in streptococcal infection, 167
 in tularemia 326
 urinary crystals due to (Fig) 3681
 in venereal infections dosage 2132
 in wound infection, dosage 3951
 Sulfaguanidine in bacillary dysentery 247
 in cholera 251
 concentration in body 101
 skin reactions caused by 3340
 in typhoid carrier 239
 Sulfamerazine evaluation (Table) 97
 in gonorrhea 292
 in pneumococcal infection, 206
 in pyelitis 2356
 Sulfanilamide evaluation (Table) 97
 in laparotomy 235
 in lupus erythematosus acute 3401
 organisms insensitive to 2355
 sensitive to 2355
 paste 1707
 in pyelonephritis dosage 2355
 Sulfanilamide in skin diseases evaluation, 3128
 skin reactions caused by 3340
 Sulfapyridine chemical structure (Fig) 89
 in dermatitis herpetiformis 3372
 evaluation (Table) 97
 powder in tropical leishmaniasis 3320
 skin reactions caused by 3340
 urinary crystals due to (Fig) 3681
 Sulfarsphenamine absorption 120
 administration 118
 chemical structure 118
 distribution 120
 evaluation (Table) 124
 excretion, 120
 Sulfasuxidine in bacillary dysentery 247
 chemical structure (Fig) 89
 in cholera 251
 concentration in body 101
 in epidemic diarrhea of newborn dosage 787
 in typhoid carrier 239
 Sulfates in blood (Table) 5
 as laxatives therapeutics 3324
 metabolism 615
 Sulfathalidine in bacillary dysentery 247
 in cholera 251
 concentration in body 101
 in typhoid fever 236
 Sulfathiazole chemical structure (Fig) 89
 cream in staphylococcal infections 154
 dermatitis (Fig) 90 350
 evaluation (Table) 97
 in fusospiral balanoposthitis 2457
 in gonococcal infections of children (Table)
 2588
 ointment in balanoposthitis 2454
 in gynecologic infections 2501
 in inclusion conjunctivitis 1033
 for staphylococcal infection of eye 1602
 in trachoma 1626
 in pyelonephritis dosage 2356
 in respiratory disturbances dosage 2079
 in skin diseases evaluation 3128
 skin reactions caused by 3340
 in staphylococcal infection 154
 in stomatitis 1699
 in streptococcal infection 166
 therapy eruption in (Fig) 90
 in treatment of thrush 2139
 urinary crystals due to (Fig) 3681
 in urinary infection of pregnancy 2644
 Sulfocyanates 3395
 in hypertension 912
 Sulfocyanides 3395
 Sulfonal evaluation (Table) 3637
 Sulfonamides 88
 in actinomycosis 492
 in acute pneumonitis 2107
 in bacillary dysentery 247
 in backward failure 917
 in brucellosis 321
 in chancroid 299
 chemical structure of (Fig) 89
 in cholera 251
 classification, 88
 in colon bacillus infection 219
 in common cold, 391 396
 evaluation, 2117
 concentration in blood, test for 3717
 conversion factor (Table) 3718
 in urine 3690

- sulfonamides in congenital cardiac disease 965
 in cystitis 2345
 in dermatitis (Fig) 90 550
 in dermatophytoses, 3316
 determination in spinal fluid 3-36
 in diphtheria, 311
 effect on nervous system 91
 on organisms (list) 91
 in encephalitis, 444
 in endocarditis, 1020 10-4
 eruptions 3337 3340
 in erythema nodosum 3391
 in eye diseases, 1552
 in fusospirochetosis 357
 in gas gangrene 301
 in gonorrhea, 22
 in Haverhill fever 365
 hemolytic anemia from 1065
 hepatitis due to 1964
 in influenza, 287
 insoluble, 100
 concentration in body fluids, 101
 effects on bowel, 101
 toxicology 100
 uses 100
 in leprosy 277
 in lupus erythematosus 3398
 in lymphopathia venereum, 4-3
 in noma, 1698
 ointment 99 3128
 in otitis media, 149
 in pemphigus, 3408
 penicillin and evaluation (Table) 113
 synergistic action of, 93
 in pertussis, 284
 pharmacology 91
 in plague 3 2
 in pneumococcal infection, 204 206
 poisoning ophthalmic manifestations, 1597
 in poliomyelitis, 463
 powder soluble, 98
 prophylaxis in valvular defect, 975
 psychoses due to 1386
 in rheumatoid arthritis, 2921
 in scarlet fever 181
 in septic sore throat, 186
 in sinus thrombosis 1448
 in sinusitis 2128
 in smallpox, 428
 soluble, 96
 administration, 99
 oral, 99
 dosage 98
 efficacy (Table) 97
 intravenous administration of 99
 subcutaneous administration of 99
 solution, 98
 in streptococcal infection, 166
 in tetanus, 293
 therapy blood cell damage, in, 111
 bone marrow damage in 95
 cyanosis in, 95
 dermatitis in 111
 fluid balance in, 102
 hemoglobin determination in 102
 management in, 101
 penicillin in, 112
 sensitization in, 95
 in thrombo-angitis obliterans, 1031
 in thrush, 2138
- Sulfonamides topical application, evaluation, 3128
 toxicity of 111
 in tsutsugamushi fever 352
 in tularemia, 3 11
 in typhus 374
 in urinary antiseptics 2257
 infection, 2321
 Sulfonamide-fast organisms, penicillin and 111
 Sulfonmethane dosage (Table) 3337
 Sulfur baths evaluation 3123
 technic 3134
 chloride poisoning clinical manifestations (Table) 749
 diagnosis (Table) 749
 occupations susceptible to (Table) 749
 treatment (Table) 749
 granules, 3309
 lotion in s. borreia, prescription, 3451
 ointment in alopecia, prescriptions, 3445 3448
 in seborrheic dermatitis, 3434
 prescriptions in acne vulgaris, 3364
 in scabies 3123
 Sulfuric acid poisoning clinical manifestations (Table) 759
 diagnosis (Table) 759
 occupations susceptible to (Table) 759
 treatment (Table) 759
 Summer fever 490
 influenza, 490
 Sunburn, 3174
 prevention, 3174
 protectives, prescriptions 3140
 remedies, 3140
 Sunglasses 1538
 Sunlight. See *Heliotherapy*
 Support, mechanical, in weight loss 701
 Suppositories in gynecology (list) 2501
 rectal, 1831
 Suppuration, hepatic, 1980
 treatment, 3963
 Suppurative pericarditis, 1010
 pericarditis 23 9
 Supracondylar fractures of humerus 30-20
 Supranuclear paralysis, of facial nerves 1485
 Supraventricular tachycardia, electrocardiogram in (Fig) 840 849
 Surgeon indications for consultation, 3655
 orthopedic, consultation of 2807
 preparation 3212
 Surgery alcoholism and 3998
 in bronchiectasis discussion, 2062
 in carcinoma, 577
 cardiac invalidism and 3999
 in chronic sinusitis, 2138
 of circulatory system 863
 in cough, 20 2
 diabetes and, 3999
 in endocrinopathies 1151
 fever and 3999
 fibrous film in, 82
 gastric, 1758
 gynecologic, 2521
 in hypertension, 914
 in infectious diseases, 73
 intranasal, 2038
 major 3992
 anesthesia in, 3002
 choice of 4004

- Surgery** major fistula in, procedure 3993
incision and drainage procedures 3993
list of 3993
practitioner's role in 3992
manipulative 3768
malnutrition and 3998
minor 3909
analgesia in 3950
anesthesia in 3915
preparations in (Table) 3914
equipment for list 3909
instruments for 3910
preparation of patient for 3912
prevention of infection in 3951
of shock in 3950
scope of 3927
sedation in 3950
nephritis and 4000
obesity and 3993
obstetric 3221
omental disorders and 1286
ophthalmic, 1557
orthopedic, evaluation 2808
penicillin therapy in 114
pregnancy and 3998
psychoses and 4000
in pulmonary embolism discussion 2090
in rheumatic fever 198
in rheumatoid arthritis 3924
risk in 3907
fair 4000
good 4000
poor 4000
sinus 2038
throat 2038
tuberculosis and 272 3999
valvular defects and 975
Surgical anesthesia 3925
toxic phase 3926
indications 3926
patient diet for 394
risk 3907
types of 4000
scarlet fever 176
Susceptibility to infection 75
Sutures wound primo-secondary (Fig) 3962
technic (Figs) 3930 3931 3932
Swallowing difficulties in myasthenia gravis 886
mechanism 1720
pain on diff diag (Table) 1722
■ wave, abnormal analysis (Table) 806
normal analysis (Table) 806
Sweat bath in common cold 395
centers, 3460
chemistry 3459
daily secretion, 3459
function 3459
gland abscess axillary (Fig) 3247
anatomy 3401
disturbances of 3459
innervation 3460
physiology 3459
sweating increased. See *Hyperhidrosis*
paravertebral nerve block for 353 3461
Swellings See also *Tumors*
abdominal generalized diff diag (Table)
1750
hypogastric diff diag (Table) 2621
in left lower quadrant, diff diag (Table)
1870
swellings abdominal in left upper quadrant
diff diag (Table) 1849
in right lower quadrant, diff diag (Table)
1886
in right upper quadrant diff diag (Table)
1057
of back diff diag (Table) 2822
bone diff diag (Table) 2841
epigastric, diff diag (Table) 1814
painless involving hips calves thighs and
legs diff diag (Table) 2826
Swimming contraindication in chronic otitis
media 2152
pool conjunctivitis 1623
Sycosis barbae 3249
vulgaris 3249
of beard diff diag (Table) 3437
diff diag (Table) 3335
(Fig) 3247
Symbiosis 37
bacterial, 146
Symblepharon etiology (Table) 1560
(Fig) 1571
symptoms (Table) 1569
Sympathectomy indications for 3994
in peripheral vascular disease 908
results (Table) 906
in Raynaud's disease 1002
in thrombo angustis obliterans 1031
Sympathetic fever 23
ganglia injection of technic 834
ganglionectomy in Raynaud's disease 1002
nervous system See *Nervous system* in
voluntary adrenergic
ophthalmia 1569
Sympathomimetic amines 3869
Synchysis scintillans (Fig) 1503
(Table) 1592
Syncope 921
altitude 926
carotid sinus 922 1400
of centrifugal shock, 923
in circulatory disease 921
clinical manifestations (Table) 927
in coronary occlusion 935
diff diag (Table) 927
drug 924
of bemic origin 923
oculovagal 923
in orthostatic circulatory insufficiency 925
shock and 928
in Stokes Adams syndrome 924
systemic 926
vasovagal 921
Synergism of drugs 3811
Synovectomy 2813
indications for 3994
Synovial cyst, 3208
diff diag (Table) 3211 3299
in osteo-arthritis 2859
Synovium 2843
Synovitis 2905
Syntropan dosage (Table) 3375
Syphilid of back (Fig) 338
of body (Fig) 339
macular of body (Fig) 3290
of palm (Fig) 338
varicelliform, 3235
Syphilis, 331
allergy and, 334

- Syphilis alopecia, 3235 3443
 aortic valvulitis, 1028
 aortitis 1025
 diff diag (Table) 994
 arsenotherapy in technic of 342
 arteriosclerosis and 978
 arthritis 2939
 asymptomatic treatment 350
 of breast 2019
 of cervix 2602
 (Fig) 2590
 chancres of nails 3435
 sites of lesions 3278
 chancreoid and diff diag 250
 circulatory disturbances in (Table) 934
 clinical manifestations 336
 complement fixation test in 334
 congenital 332
 treatment, 351
 conjunctivitis 1022
 of coronary arteries 1012 1026
 course 340
 cutaneous manifestations (Table) 346
 dermatosis in diff diag (Table) 3413 3315
 démobée 2380
 diagnosis 336
 darkfield microscopy in 45
 (Fig) 46
 methods of (Table) 346
 by smear (Table) 81
 diff diag (Table) 174 175 180 193 291
 413 423 3369 3379 3383
 drugs in 116
 early treatment 340
 endocarditis 1024
 diff diag (Table) 1018
 epidemiology 332
 biology 331
 experimental 332
 extragenital 332
 fever in diff diag (Table) 1006
 flocculation test in 334
 genital 332
 immunity in 332
 in infancy diff diag (Table) 3147
 iodides in 608
 joint pain in diff diag (Table) 2802
 latent treatment 350
 lesions of (Fig) 3279
 lymphadenopathy in diff diag (Table) 1136
 macular atrophy of skin due to (Fig) 3403
 malignancy and 3215
 meningitis diff diag (Table) 443
 torulosis vs 498
 meningovascular 1468
 mucous patch of lip in (Fig) 338
 myocarditis 1015
 of neck diff diag (Table) 3255
 neonatal 2787
 craniotabes from diff diag (Table) 2774
 diff diag (Table) 2729 2761
 epiphyses in diff diag (Table) 2930
 of nose diff diag (Table) 3463
 prevention 2791
 stridor in diff diag (Table) 2733
 nervous system 1460
 neurologic examination in 339
 treatment 350
 nose in, diff diag (Table) 2111
 ocular manifestations 1605
- Syphilis orchitis 2463
 osteochondritis 2938
 pathology 334
 penicillin in 340
 evaluation 111
 penis in, 2456
 penostitis 2037
 pigmentation in diff diag (Table) 3156
 pregnancy and 2671
 in pregnancy treatment, 350
 prenatal 3247
 oral manifestations 1672
 treatment 351
 prevention 347
 primary chancre in 336 3278
 (Fig) 335
 oral manifestations 1671
 skin lesion 3278
 sites 3278
 prophylaxis 348
 of prostate gland 2473
 psychoses 1377
 quarantine data on (Table) 67
 rash in diff diag (Table) 172
 secondary cutaneous manifestations 3.81
 (Fig) 1671
 oral manifestations 1672
 skeletal disorders in diff diag (Table) 2935
 skin manifestations 3276
 diff diag (Table) 3419
 spinal cord involvement diff diag (Table) 1461
 stillbirth 2671 2787
 of stomach 1766
 streptomycin in 111
 swelling in diff diag (Table) 4955
 symptoms other than rash in diff diag (Table) 2780
 tertiary cutaneous manifestations 3286
 jaundice in diff diag (Table) 1954
 of nose diff diag (Table) 3285
 oral manifestations 1672
 of testes 2465
 throat in diff diag (Table) 3000 3601
 transfusion 332
 treatment 340
 bismuth in (Table) 123
 cure criteria in 347
 failure of cure in 347
 intensive treatment of 344
 mercurial ointments in, 131
 mercuric oxycyanide in 131
 mercuric salicylate in 131
 mercuric succinimide in 131
 penicillin in 340
 preliminary 343
 U S Army method of 347
 Treponema pallidum in (Fig) 29
 of upper genital tract 2611
 urethritis 2337
 of vas deferens 2466
 visceral treatment 350
 of vulva 2389
 Wassermann reaction in 337
 Syphiloderma annulopapular 3285
 blastomycosis vs 494
 follicular 3235
 macular 3281
 nodulo-ulcerative 3236
 palmar 2283

- Syphiloderma papular 3*81
 pigmentary 3283
 plantar 3283
 proctiform 3235
 pustular 3245
 Syringe intravenous injection by 3773
 (Figs) 3772 3773
 for urethral injections (Fig) 2251
 Syringobulbia 1503
 Syringocystoma 3*09
 diff diag (Table) 3211 3369
 pigmentation in diff diag (Table) 3156
 Syringomyelia 1503
 gravitation shock in 923
 leprosy vs 276
 spinal cord disturbances diff diag (Table)
 1433
 Syrups 38*0 3321
 Systolic hypertension diff diag (Table) 910
 murmurs description (Table) 973

T
 Tachy as vector (Table) 42
 Tabes dorsalis 1464
 diff diag (Table) 1432
 gravitation shock in 923
 ophthalmic manifestations 1383
 treatment 1466
 gastric 1767
 predisposing to fracture 2952
 Tabetic crises 1465
 Taboparesis 13*0
 Tache cérébrale in meningitis 213
 Tachycardus auricular 881
 diff diag (Table) 875
 in hyperthyroidism 1204
 in lobar pneumonia, 2173
 nodal electrocardiographic diagnosis of 810
 paroxysmal diff diag (Table) 882
 digitalis in 858
 nodal 881
 quinidine in 897
 ventricular 893
 sinus 874
 supraventricular electrocardiogram in (Fig)
 840 849
 electrocardiographic diagnosis 810
 in leptospirosis in fever 362
 in tuberculous pneumonitis 2202
 ventricular in digitalis intoxication 861
 quinidine in, 862
 Tachypnea diff diag (Table) 3*036
 Taenia hominis differential characteristics
 (Table) 3*33
 agnata life cycle 1899
 morphology (Table) 3732
 in stool (Fig) 3*31
 solium 1899
 morphology (Table) 3*32
 in stool (Fig) 3731
 Takata Ara reaction 1949
 Talc use 3129
 Talipes 2631
 calcaneus (Fig) 2430
 diff diag (Table) 2810
 equinovarus (Fig) 2830
 equinus (Fig) 2830
 lump and (Table) 2*36
 paralytic (Fig) 2930
 Tamponade cardiac, 8*2
 Tampons vaginal 2301
 Tannic acid as anidrotic prescription 3130
 solution in prevention of contact derma-
 titis 3333
 uses 3129
 Tapeworm infestations 1899
 epidemiology of 1900
 treatment 1895
 Tapotement 3766
 Tar bath preparation 3130
 cancer 3110
 carcinogenic properties 3215
 melanosis 3176
 preparations in dermatitis dermatologica 3371
 in lichen planus 3394
 in lichen simplex 3230
 in skin diseases 3130
 Tarantula bites 3197
 Tardive heredosyphilis 2791
 Target cell anemia 1071
 diff diag (Table) 1060
 Tarsitis 1615
 Tarsus dislocation 2981
 treatment (Table) 2977
 fracture 3052
 treatment (Table) 3039
 Tartar emetic in granuloma inguinale 477
 formation 1609
 Taste disturbances in trigeminal paralysis 1433
 time determination 788
 Tattoo marks pigmentation in, diff diag
 (Table) 3156
 Tay Sachs disease See *Amaurotic family*
 idiocy
 Taylor brace in back sprain 30*0
 Tea 636
 Tear gas 745
 glands See *Lacrimal glands*
 Tearing 15 4
 deficient, etiology (Table) 1569
 symptoms (Table) 1569
 diff diag (Table) 1525
 in riboflavin deficiency (Fig) 524
 Teeth. See *Tooth*
 Tegumentary system 3099 See also *Skin*
 disturbances in infancy (list) 2759
 medication methods 3152
 in pregnancy 2625
 Telangiectases 3903
 deficient in 3104
 diff diag (Table) 3331
 hereditary hemorrhagic 1112 3203
 diff diag (Table) 1112
 oral 16*7
 oral, diff diag (Table) 1668
 Teleroentgenogram (Fig) 799
 Teleoentgenography 801
 Telescoping sign in dislocation of hip 2329
 Tellurium poisoning chemical manifestations
 (Table) 2*0
 diagnosis (Table) 759
 occupations susceptible to (Table) 759
 treatment (Table) 759
 Temperature body 3134
 changes in pregnancy 26*8
 normal, fluctuations in, 3134
 skin function in 3100
 subnormal, 20
 acute diff diag (Table) 27
 sustained diff diag (Table) 21

- Temperature curve in diagnosis, 41
 high hematologic variations due to 101²
 rectal, 3434
 regulation, physiology 20
 rise See *Fever*
 room, in infectious diseases 70
 in shock prevention, 939
 Temporal arteritis 103²
 lobe lesion, ophthalmic manifestations 1585
 reaction pattern, 1426
 Temporomandibular joint, ankylosed 1639
 chronic subluxation 2966
 dislocation, 1622 296₂
 (Fig) 1688
 signs (Table) 2965
 treatment (Table) 2965
 Tenderness See *Pain*
 Tendon lengthening 2812
 reflexes in shock 931
 rupture 2957
 sheaths of hand, anatomy 3073
 (Fig) 3074
 infections 3976
 transplantation, 2912
 xanthoma, 3444
 Teniasis, intestinal 1839
 epidemiology (Fig) 1900
 Tennis elbow 2063
 Tenodesis 2812
 Tenonitis, 1615
 Tenoplasty, indications for 3995
 Tenorrhaphy 3354
 (Fig) 3953
 Tenosynovitis dry 2001
 of finger incision for (Fig) 3975
 joint pain in diff diag (Table) 2803
 stenosing 2001
 Tenotomy 2812
 in locations for 3995
 Tension, definition, 1302
 intra-ocular 1580
 pneumothorax relief 2056
 Teratoma malignant 2443
 of ovary 2672
 of testis diff diag (Table) 2444
 (Fig) 2442
 Tersus, evaluation, 3153
 Tertian malaria, 513
 Tertiary syphilis 3-86
 Test(s) of acuity of hearing 201₂ 3611
 in Addison's disease 1276
 agglutination, 56
 in brucellosis 317
 in cholera 230
 interpretation, 56
 in pertussis 281
 rapid el de method, 56
 All n Dowsy 2315
 Allergy 655
 interpretation, 361
 arterial insufficiency 3582
 Aschheim Zondek 2406
 Babcock for mental deterioration, 1326
 benzidine 3685
 bilirubin excretion, 1918
 blood 369₂
 bromsulfalein, 1948
 brucellergen, 317
 caloric 2018
 capillary fragility 1109
 Test(s) cephalin-cholesterol flocculation 1950
 cerebrospinal fluid, 3734
 charts for vision (Fig) 3626
 coccioidin, 501
 cold agglutins, 3711
 colloidal gold 3736
 for color sense 1541
 complement fixation 27
 indications, 57
 interpretation, 58
 technic 57
 concentration, 2241
 Congo red in amyloidosis 7
 contact in allergy technic 556
 Culter Power Wulder 1276
 for diabetes mellitus 1250
 Dick 183
 (Fig) 58
 dilution, 2242
 diplopia, 1529
 Donath Landsteiner 1075
 Ehrlich's technic, 3321
 flocculation, in syphilis 534
 formol gel 1949
 Francis 202
 Frei technic, 473
 Friedman, 2496
 galactose tolerance 1949
 galvanic 2018
 glucose tolerance, 1949 3716
 Gordon, in Hodgkin's disease 1140
 gunnastic, 357
 Hiss in nocturnal hemoglobinuria 1076
 hippuric acid synthesis 1949
 intelligence 152₂
 army 1323
 Beroreuter 1323
 Buhlmann Anderson, 1325
 Terman Binet 1323
 intradermal (Fig) 539
 technic 537
 Jung tree association, 1327
 light ring straight, 3064
 liver function, 1947
 excretory 1947
 metabolic 1949
 mallein 327
 Maloney 310
 Mantoux, technic of 263
 meals for occult blood, 1744 3721
 Neufeld in influenza 287
 Ober 2897
 ophthalmic (Fig) 554
 of serum sensitivity 86
 technic 536
 panophagocytic in brucellosis, 318
 in pertussis 281
 technic 263 536
 Perthes 3941
 (Fig) 3940
 phenolsulfonphthalein 24
 pitres in, in epilepsy 1516
 precipitin, 56
 pregnancy 2496 2619
 Pressay A.C. 1326
 psychometric 1323
 Queckenstedt in spinal cord tumors 1434
 for renal function 2240
 Runne 1486 2017
 Rorschach, 1326

- Test(s) Rosenbach 1075
 rotation 2018
 Rubin 2494
 salt deprivation 1276
 Schick technic 303
 Schiller 25,3
 Schmidt for bile pigment 3725
 Schultz Charlton 179
 scratch technic 557
 sensitivity to serum 86
 serologic 63
 collection of blood for 66
 in diagnosis (Table) 59
 significance 65
 serum phosphatase 1950
 skin 55
 in brucellosis 317
 in chancreoid (Fig) 289
 in diagnosis 61
 (Table) 50
 significance 50
 sodium d lactate 1950
 Takata Iza, 1949
 Terman Binet 132,3
 therapeutic iodine in hyperthyroidism 1213
 Trendelenburg 3910
 (Fig) 313J
 tuberculin 263
 interpretation 264
 positive (Fig) 263
 urea clearance 2448
 urine 3667
 van den Bergh 1947
 venous filling time 3,83
 Wassermann 337
 false positive 276
 interpretation 337
 Weber 1480 2017
 Weil Felix 837
 Widal 234
 Testalgia 243J
 faulty posture and 30,8
 Testes absence of congenital 2412
 actinomycosis 2460
 cyst my 2307 3637
 confusion 2478
 (Fig) 2390
 hydrocele 2430
 complications in 2431
 diagnosis 2432
 (Figs) 2431 2432
 injection 2433
 leprosy 2435
 luxation 2425
 migratory 2424
 pain in See Testalgia
 seminoma (Fig) 2412
 swelling of diff diag (Table) 309
 teratoma (Fig) 2442
 torsion 2420
 differentiation from acute epididymitis 2422
 differentiation from orchitis 2429
 differentiation from strangulated hernia, 2429
 predisposing causes 2429
 tumors 2431
 benign 2441
 embryonal gonadotropic substance in 2443
 Testes tumors malignant 2442
 diff diag (Table) 2444
 tumors of pathology 2304
 Testicular deficiency androgen therapy in 2405
 hormone See Androgen
 Testosterone 2461
 therapeutics 2405
 untage 2404
 Tetanus 294
 animal inoculation in (Table) 62
 antitoxin bovine evaluation 21
 dosage 297
 evaluation 83
 culture in (Table) 55
 diagnosis 295
 by smear in (Table) 51
 immunization active 296
 passive 297
 neonatorum 294
 nursing care in 298
 pathogenesis 295
 penicillin in 298
 in peripheral nerve infections diff diag (Table) 1461
 postvaccina' 432
 prevention 296
 prognosis 296
 quarantine data on (Table) 67
 sedation in 299
 seizure 295
 sulfonamides in 298
 surgery in 298
 surgical 294
 toxin mechanism 77
 toxoid administration (Table) 80
 alum precipitated in fracture (Table) 2984
 dosage 297
 evaluation 78
 evaluation, 78
 whooping cough vaccine diphtheria toxoid combined evaluation of 78
 treatment 296
 virulence mechanism 145
 Tetanus gas gangrene antitoxin 297
 evaluation 83
 in compound dislocation 2904
 in fracture (Table) 2984
 Tetany 723
 calcium salts in 604
 chronic results 725
 neonatal 1232 2778
 postoperative treatment 1233
 recalcification complicating parathyroid surgery 1231
 after thyroidectomy 1216
 treatment 726
 Tetrachlorethylene 1895
 (Table) 1893
 Tetraethylammonium in Raynaud's disease 1003
 lead poisoning (Table) 759
 diagnosis (Table) 759
 occupations susceptible to (Table) 759
 treatment (Table) 759
 Tetralogy of Fallot 961
 diff diag (Table) 668
 right heart failure from 242
 signs (Table) 964
 Tetral, evaluation (Table) 3837
 Texas fever 314 See also Brucellosis

- Thalamic fever** 25
 reaction pattern 1476
 syndrome Dejerine Roussy 1476
Thalassemia 1071
Thallium acetate, alopecia caused by 3443
 evaluation 3140
 poisoning clinical manifestations (Table) 760
 diagnosis (Table) 760
 occupations susceptible to (Table) 760
 treatment (Table) 760
Thallus definition, 483
Theca cell tumor of ovary 2574
Thenar space infections 3276
Theobromine dosage 2261
 (Table) 3866
Theophylline as diuretic 2260
 (Table) 3866
 mono-ethanolamine in urticaria dosage 3319
Therapeutic abortion indications for 2649
 tests in diagnosis 41
Therapeutics principles of 3747
Therapy occupational 3760
Thiamine chloride See also Vitamin B₁
 deficiency cutaneous manifestations, 2235
 heart in 1014
 in eye diseases 1554
 in herpes zoster 437
 in migraine 1600
 in tabes dorsalis 1467
 therapeutics 623 5825
 in weight loss 701
 deficiency 622
 cause of Wernicke's disease 1502
 oral 1675
Thigh gumma of (Fig) 338
Thinking see *Thoughts*
Thiothymol, dosage (Table) 123
Thiocyanates 8835
 effect on muscle 3883
 evaluation 3896
Thiouracil 1150
 dosage 1211
 in infancy dosage 2744
 toxicity 1212
Thirst in diabetes insipidus 1181
 in diabetes mellitus 1243
Thistle Rus see geographic distribution (Fig) 580
Thomas pessary 2540
 splint 2992
 (Fig) 2992
Thomsen's disease 2386
Thoracentesis diagnostic in pleural effusion 2222
 method 2030
 suction bottle outfit for (Fig) 2030
Thoracic aorta diff diag (Table) 994
 cage movements in 3549
 abnormal diff diag (Table) 3528
 shape 3525
 type 3525
 cavity anatomy 3330
 clinical examination 3332
 duct lymphatics of function 786
 obstruction causes (Table) 969
 signs (Table) 969
 empyema diff diag (Table) 404
 fracture treatment (Table) 3004
 in rib injuries motor signs in (Table) 1490
Thoracic pain diff diag (Table) 2940
 surgery major 2030
 postoperative care in 2010
 preoperative care 2041
 visceral, reflection on chest walls 3527
 wall See *Chest wall*
Thoracoplasty extrapleural, 2040
 in tuberculous pneumonitis contraindications 2209
 indications 2209
 indications for 3035
Thoracotomy 2030
 indications for 3033
Thorax See also *Chest*
 febrile disorders in diff diag (Table) 401
 (Fig) 3532
 palpation 3532
 physical examination 3522
 zones, 3526
Thornwaldt's abscess 2140
Thought blocking definition 1297
 obsessive definition 1298
 production, 1296
 progression definition, 1297
 rational, definition 1296
Three day fever 480
Throat, abnormalities of visible diff diag (Table) 3600
 abscess diff diag (Table) 3600
 culture in infancy indications 2740
 foreign bodies in 3084
 in infancy examination 2731
 inflammation diff diag (Table) 3600
 irrigation 2027
 pain in diff diag (Table) 2071 2732
 sore septic 185
 streptococcus quarantine data on (Table) 67
 surgery 2030
Thrombasthenia chronic hereditary 1117
Thrombus fibrin film with 82 1049
Thrombo-angitis obliterans 1029
 allergen in 563
 coronary arteritis in 1013
 diff diag 1030
 (Fig) 4028
 vasodilatation in, 3987
Thrombocytes 3794
 in blood clotting 1100
 count in infancy indications 2739
 cytology 1040
 disturbances 1114
Thrombocytopenia in blood clotting 1109
 essential 1114
 diff diag (Table) 1112
 (Fig) 1676
 splenomegaly and 1117
 symptomatic 1117
Thrombocyte in 1118
 in blood clotting 1109
 (Fig) 1029
Thrombophlebitis 711 1124 2604
 in congestive failure 943
 in erysipelas 170
 fever in diff diag (Table) 1007
 of leg veins 711
 ligation of vein in technique 3042
 postoperative prevention 4005
 treatment, 4018
 septic, 2604
 (Fig) 2604

- Thrombophlebitis treatment** 3963
Thromboplastin in acute hemorrhage 1059
 in blood clotting 1108
Thrombosis 18 See also *Embolism*
 cerebral 1441
 differentiated from hemorrhage 1441
 diff diag (Table) 1437
 coronary artery See *Coronary occlusion*
 fever in diff diag (Table) 1007
 in hypertension 907
 intravascular 1123
 of leg veins ligation 1125
 peripheral in backward failure 915
 postoperative 1123
 prevention 4005
 of renal veins 2330
 vascular in peripheral vascular disease 995
 in vena cava (Fig) 12
 of venous sinuses diff diag (Table) 1437
 intracranial 1446
Thrombotic endocarditis nonbacterial 1020
Thrombus formation in typhoid fever 229
 in vena cava (Fig) 12
Thrush 603 169- 2186
Thrush absent 2322
 metacarpophalangeal dislocation 2077
 treatment (Table) 2971
 sporotrichosis of (Fig) 3019
 stave fracture of 3035
Thymectomy indications for 3094
Thymic asthma 1235
Thymol as anthelmintic 1897
 (Table) 1898
 as fungicide prescription, 3125
 iodide evaluation 3120
Thymoma malignant 1236
Thymus gland 1234
 (Fig) 1234
 hyperplasia, 1236
 physiology 1234
 persistence, diff diag (Table) 2733
Thyrotoxic diarrhea 1839
Thyroglobulin 1188
Thyroid adenoma iodide and 611
 apoplexy 1208 1292
 diff diag (Table) 3518
 deficiency edema in diff diag (Table) 717
 desiccated in myxedema dosage 1197
 diabetes 1047
 extract in alopecia areata 3447
 in cretinism dosage 1192
 dosage 1189
 in glomerulonephritis dosage 2336
 in hypertension 912
 in infancy dosage 2744
 in obesity 619
 overdosage effects 1190
 in Raynaud's disease 1002
 in scleroderma adultorum 3497
 therapeutics 3425
 in urticaria 3349
 gland 1186
 accessory 1218
 adenoma, 1221
 anatomy 1186 2513
 anomalies 1218
 atrophy 1220
 carcinoma 1221
 clinical disturbances 1218
 cysts, 1222
 Thyroid gland endocrine glands and interne
 relationship 1199
 examination 3513
 in exophthalmic goiter (Fig) 610
 growth and 1187
 hyperplasia 1193
 (Fig) 8
 hypertrophy 1220 See also *Goiter*
 (Fig) 8
 inflammations 1222
 iodine metabolism and 609 1183
 malignancy in 1208
 metabolism of food and 1187
 nervous system influenced by 1188
 pathogenesis 1198
 pathology 1201
 pharmacology 1183
 physiology 1187
 disorders 1191
 preparations 1183
 absorption 1190
 assay 1190
 therapeutics 1190
 sarcoma (Fig) 275
 toxic adenomatosis of 1221
 tumors of 1221
 diff diag (Table) 3514
 hormone calorogenic action 1187
 food balance and 704
 renal function and 1187
Thyroidectomy 1214
 effects 1199
 hypoparathyroidism following 1232
 indications for 3094
 laryngeal paralysis following 3092
 postoperative care 1215
 subtotal in backward failure 347
Thyroiditis 1222
Thyrototoxic crisis 1207
Thyrototoxicosis fever in, diff diag (Table) 718
 1006
Thyrotropin (Table) 1164
Thyroxin dosage 1189
Tibia osteochondritis of (Fig) 2030
 periostitis of (Fig) 2932 2939
 shaft fractures of 3017
Tibial condyles fracture of 3046
 treatment (Table) 3038
 nerve injuries motor signs (Table) 1493
 shaft fracture treatment (Table) 3038
 spine fracture 3046
 treatment (Table) 3033
Tic(s) definition 1310
 diff diag (Table) 2883
 douloureux 1484
 diff diag (Table) 2133
 facial diff diag (Table) 3107
Ticks bites 1301
 in Rocky Mt spotted fever 379
 classification (Fig) 3192
 disease and 41
 fever 367
 Colorado 284
 diff diag (Table) 28
 paralysis 3193
 removal 3193
 as vector (Table) 42
Tick borne relapsing fever 353
 typhus, classification (Table) 367
Tidal air definition 2014

- Tifo recurrente 337
 Time, claudication definition, 792
 intervals description, 804
 Timothy geographic distribution (Fig) 860
 Tinctures, 3321
 Tinea, 353
 Tinea barbae 3304
 diff diag (Table) 3437
 (Fig) 3303
 capitis 3302
 diff diag (Table) 3235 3439
 (Fig) 3294
 circinata, 3293
 corporea, 3293
 diff diag (Table) 3369
 (Fig) 3294
 cruris, 3293
 diff diag (Table) 3269 3383
 umbricata, 3307
 pigmentation in diff diag (Table) 3156
 in infancy diff diag (Table) 3137
 pedis, 3298
 (Fig) 3294
 tycosus See *Tinea barbae*
 versicolor 3300
 diff diag (Table) 3369
 (Fig) 3294
 pigmentation in diff diag (Table) 3156
 rash in, diff diag (Table) 3283
 sodium thiosulfate in, 3128
 Tinnitus, diff diag (Table) 2141
 Tiredness See *Asthma*
 Tissue(s) body reaction, 3
 connective 3
 leukocytosis in, diff diag (Table) 1097
 fluids alterations in, disease 10
 physiology 702
 general reactions 1
 immunity to tuberculosis 258
 localization in rickettsial infections 363
 metabolism humeral changes in 6
 nervous factors in, 6
 replacement, 10
 response sulfonamide therapy and 93
 similarity 3
 tension physiology 703
 virus affinity for 339
 Titer rise in, significance 66
 To and fro murmur description (Table) 973
 Tobacco 3384
 arteriosclerosis and, 978
 diabetes and 1,55
 eye signs due to 1597
 in hypertension on 914
 peptic ulcer and, 1781
 in peripheral vascular disease 907
 in pregnancy 2632
 thrombo-angiot obliterans and 1030
 in weight loss 701
 Toes clubbing of in congenital heart disease 962
 in endocarditis 1023
 dermatoses of diff diag (Table) 3296
 dislocation, treatment (Table) 2977
 fracture 3033
 treatment (Table) 3039
 hammer 3039
 overlapping 3039
 pain in, diff diag (Table) 2908
 Toenail ingrown infected 3977
 removal, 3944
 (Fig) 3944
 Tolsyn, evaluation, 3833
 Tongue abscess 1707
 actinomycosis 491
 anatomy 3598
 angiooma, 1715
 bird, 1684
 black, in leukemia (Fig) 1696
 burning of in Moeller's glossitis 1707
 carcinoma, epidermoid, 1718
 (Fig) 1719
 cleft, 1684
 in cretinism (Fig) 1192
 dissection (Figs) 3597
 disturbances, diff diag (Table) 1687
 fissured, 1686
 geographic, 1686
 (Fig) 1686
 hairy 1708
 innervation 3598
 magenta (Fig) 1674
 mucous patch on (Fig) 1671
 in niacin deficiency (Fig) 624
 scrotal (Fig) 1686
 strawberry (Fig) 177
 thick in myxedema, 1195
 Tongue tie 1685
 Tonics, 1756
 arsenic as 126
 Tonometry 1545
 Tonsil, abscess 2155
 calculus 2159
 carcinoma 2070
 faucal examination 3603
 hyperkatoxis 2159
 hyperplastic, 2157
 lingual examination, 3602
 lymphosarcoma 2070
 Tonsillar diphtheria (Fig) 303
 surg 306
 Tonsillectomy 2038
 in faucal tonsillitis 2154
 indications for 2153 3694
 poliomyelitis and, 465
 Tonsillitis 215
 acute complications in, 2154
 faucal 2153
 nephritis after 2375
 chronic, 2158
 lingual acute 215
 chronic 2153
 Tonsillectomy indications for 3693
 Tonus cardiac 772
 variations in (Table) 772
 Tooth edentulous 3596
 disturbances diff diag (Table) 1703
 examination 3596
 traction 1663
 contraindications 1664
 osteomyelitis following 1706
 psora 1662
 pericoronal abscess of (Fig) 1696
 permanent, 3696
 powder 1662
 in rickets (Fig) 1674
 Toothache diff diag (Table) 1630
 Tophi in gout, 2873
 diff diag (Table) 3404

- Thrombophlebitis treatment** 3963
Thromboplastin in acute hemorrhage 1059
 in blood clotting 1109
Thrombosis 13 See also *Embolism cerebral* 1441
 differentiated from hemorrhage 1441
 diff diag (Table) 1437
 coronary artery See *Coronary occlusion*
 fever in diff diag (Table) 1007
 in hypertension 907
 intravascular 1123
 of leg veins ligation 1125
 peripheral in backward failure 345
 postoperative 1125
 prevention 4005
 of renal veins 2330
 vascular in peripheral vascular disease 995
 in vena cava (Fig) 12
 of venous sinuses diff diag (Table) 1457
 intracranial 1446
Thrombotic endocarditis nonbacterial 1020
Thrombus formation in typhoid fever 329
 in vena cava (Fig) 12
Thrush 603 1697 2138
Thumb absent, 2322
 metacarpophalangeal dislocation 2977
 treatment (Table) 2971
 spontaneous of (Fig) 3310
 stave fracture of 3035
Thymectomy indications for 3994
Thymic asthma 1235
Thymol as anthelmintic, 1897
 (Table) 1898
 as fungicide prescription 3125
 iodide evaluation 3120
Thymoma malignant 1236
Thymus gland 1231
 (Fig) 1234
 hyperplasia, 1236
 physiology 1231
 persistence diff diag (Table) 2733
Thyrogenic diarrhea 1839
Thyroglobulin 1168
Thyroid adenoma iodide and 311
 apoplexy 1203 1232
 diff diag (Table) 3516
 deficiency edema in diff diag (Table) 717
 desiccated in myxedema dosage 1197
 diabetes 1247
 extract in alopecia areata 3147
 in cretinism dosage 1192
 dosage 1189
 in glomerulonephritis dosage 2586
 in hypertension 912
 in infancy dosage 2744
 in obesity 699
 overdosage effects 1190
 in Raynaud's disease 1002
 in scleroderma adultorum 3147
 therapeutics 3225
 in urticaria 3347
 gland 1186
 accessory 1218
 adenoma, 1221
 anatomy 1186 3519
 anomalies 1218
 atrophy 1220
 carcinoma, 1221
 clinical disturbances 1218
 cysts, 1222
Thyroid gland endocrine glands and, interrelationships 1199
 examination 3513
 in exophthalmic goiter (Fig) 610
 growth and 1187
 hyperplasia 1198
 (Fig) 8
 hypertrophy 1220 See also *Goiter*
 (Fig) 8
 inflammations 1222
 iodine metabolism and 609 1188
 malignancy in 1208
 metabolism of food and 1187
 nervous system influenced by 1188
 pathogenesis 1198
 pathology 1201
 pharmacology 1183
 physiology 1187
 disorders 1191
 preparations 1189
 absorption 1190
 assay 1190
 therapeutics 1190
 sarcoma (Fig) 575
 toxic adenomatous of 1221
 tumors of 1221
 diff diag (Table) 3514
 hormone calorogenic action 1187
 fluid balance and 704
 renal function and 1187
Thyroidectomy 1214
 effects 1199
 hypoparathyroidism following 1232
 indications for 3004
 laryngeal paralysis following 2092
 postoperative care 1215
 subtotal in backward failure 247
Thyroiditis 1222
Thyrotropic crusts 1207
Thyrototoxicosis fever in diff diag (Table) 718
 1006
Thyrotropin (Table) 1184
Thyroxin dosage 1189
Tibia osteochondritis of (Fig) 2039
 pericostitis of (Fig) 2038 2039
 shaft fractures of 3047
Tibial condyles fracture of 3046
 treatment (Table) 3033
 nerve injuries motor signs (Table) 1429
 shaft fracture treatment (Table) 3038
 apine fracture 3046
 treatment (Table) 3038
Tic(s) definition, 1310
 diff diag (Table) 2833
 douloureux 1482
 diff diag (Table) 2133
 facial diff diag (Table) 3507
Tick bites 3191
 in Rocky Mtn spotted fever 379
 classification (Fig) 3192
 disease and 41
 fever 357
 Colorado 384
 diff diag (Table) 28
 paralysis 3193
 removal, 3193
 as vector (Table) 42
Tick borne relapsing fever 338
 typhus classification (Table) 347
Tidal air definition, 2014

- Trichinosis fever in diff diag (Table) 1006
 intra-cutaneous test for (fig) 851
 myocarditis in 1015
 electrocardiogram (Fig) 854
 (Table) 954
 ocular manifestations 1608
 prevention 543
 quarantine data on (Table) 67
 serologic test in (Table) 60
 skeletal disorders in diff diag (Table) 2935
 skin test in (Table) 60
 treatment 542
 Trichloroacetic acid uses 3190
 in xanthelasma palpebrarum administra-
 tion 3243
 Trichlorethylene 3364
 poisoning, clinical manifestations (Table)
 760 760
 diagnosis (Table) 760
 occupations susceptible to (Table) 760
 treatment (Table) 760
 in trigeminal neuralgia 1492
 Trichomonas infections lactic acid in 3121
 topical applications in dosage 3501
 urethritis 2358
 vaginalis 2593
 (fig) 2596
 in urine 3684
 vaginal smears in techn. 2496
 vaginitis 2598
 treatment 2599
 silver picrate in 154
 Trichomoniasis diagnosis by smear in
 (Table) 81
 Trichomycosis axillaris 3303
 nodosa 3450
 diff diag (Table) 3253
 Trichophytid (fig) 551
 Trichophyton 3290
 desensitization 3309
 reaction in tinea barbae 3304
 Trichophyton 3302
 characteristics 437
 gypseum 3299 3304
 purpureum 3 99 3304 3306
 violaceum 3304
 Trichophytosis skin test in (Table) 60
 Trichorrhexis nodosa 3449
 of beard diff diag (Table) 3437
 diff diag (Table) 3439
 Trichotillomania 3254
 diff diag (Table) 3439
 Trichuriasis 1306
 Trichuris trichiura morphology (Table) 343
 ova (Fig) 1894
 size (Fig) 1894
 in stool (Fig) 3731
 Trispid insufficiency blood pressure in
 (Table) 970
 causes (Table) 970
 electrocardiogram in (Fig) 824
 (Table) 970
 prognosis (Table) 974
 signs (Table) 970
 stenosis blood pressure in (Table) 970
 cause (Table) 9 0
 electrocardiogram in (Table) 970
 prognosis (Table) 974
 signs (Table) 970
 Tridione in epil psy dosage 1517
 Triethanolamine-technical uses 3131
 Trifacial neuralgia 1492
 Trigeminal nerve motor irritation 1493
 paralysis motor 1494
 sensory 1493
 neuralgia, 1492
 neuritis 1491
 rhythm 887
 electrocardiogram in (Fig) 827 840 844
 845 846 847 848
 Trigger finger 2701
 Trinitrotoluene fever due to 24
 Trinitrotoluene poisoning of uical manifestations
 (Table) 757
 diagnosis of (Table) 757
 occupations susceptible to (Table) 757
 treatment (Table) 757
 Trisinal evaluation (Table) 3237
 Triphal in rheumatoid arthritis 2922
 Triple response of skin, 785
 Trivalent organic arsenicals 116
 Trochlear neuritis 1647
 Trombicula as vector (Table) 42
 Tromb diosis 3190
 Tropical bubo 471
 macrocytic anemia, 1083
 splenomegaly 534
 sprue 1084
 Tropism 28 0
 Trousseau sign 24
 Trudeau sanitarium for tuberculosis 270
 Trunk bending exercises 975
 Truss for hernias 1903 3095
 (Fig) 3094
 Trypan blue in l prosy 277
 Trypanosoma cruzi in Chagas disease 532
 gambiense (Fig) 48
 Trypano omiasis 531
 antimony and potassium tartrate in dosage
 133
 diagnosis 533
 by smear in (Table) 51
 fly as vector in (Table) 42
 gambian 531
 mite as vector in (Table) 44
 neutralization test in 60
 rhodesian 531
 serologic test in (Table) 60
 South American 531
 treatment 533
 anti-infective agents in 88
 antimony in 152
 trypanamide in 120
 Trypanamide administration 120
 chemical structure 120
 dosage 1 0
 efficacy (Table) 124
 skin reactions caused by 3340
 in tabes dorsalis 1457
 Tsutsugamushi fever 381
 animal inoculation in (Table) 62
 fever in diff diag (Table) 1006
 (Fig) 38
 mite as vector in (Table) 42
 serologic test in (Table) 60
 treatment 382
 fub bath 3133
 fubal abortion 2660
 pathology 2658
 insufflation technic 2493

- Tophi in gout (Fig) 2873 2874
 Topical anesthesia 3916
 Torticollis congenital 2816
 myositic, 2895
 Torula characteristics 487
 histolytica 497 5315
 (Fig) 486
 Torulosis 496
 cutaneous lesions 5316
 diff diag (Table) 443
 of lung (Fig) 2211
 Torus palatinus 1638
 (Fig) 1638
 Totalaquine in malaria 519
 dosage 522
 Tourniquet test in purpura hemorrhagica 3426
 Toxemia definition 49
 after inflammation III
 in estimal use of augustin, 691
 of pregnancy 2633
 diet in 2641
 diff diag (Table) 910
 edema in 714
 essential hypertension in (Table) 955
 shock in 938
 treatment 2641
 streptococcal 162
 Toxicoderm fever due to 24
 Toxicosis alimentary of newborn diff diag
 (Table) 2782
 hemorrhagic capillary 3424
 diff diag (Table) 1112
 joint pain in, diff diag (Table) 2603
 Toxins in active acquired immunity 77
 (lust) 78
 Toxoids in active acquired immunity 77
 (lust) 78
 Toxoplasmosis 535
 diff diag (Table) 443
 Trachea anatomy 2034 3330
 disturbances of diff diag (Table) 3312
 foreign bodies 2045
 tumors malignant 2077
 Tracheal catheter (Fig) 2769
 lug 3512
 Trachelorrhaphy indications for 3995
 Tracheobronchitis acute 2166
 ulceromembranous 2167
 Tracheotomy indications for 3993
 (Fig) 3937
 technic, 3938
 Trachoma 1625 (Fig) 1625
 copper sulfate in 1555
 sulfathiazole ointment in, 1626
 Traction application of 2997
 diverticula of esophagus 1734
 hitch (Fig) 2903
 in shoulder reduction 2973
 skeletal 2811
 skin 2811
 after bumper fracture (Fig) 5000
 Tragacanth mucilage of prescription 3130
 paste prescription 3130
 uses 3130
 Train sickness 3876
 Transcondylar fractures of humerus 5023
 Transference neurosis 1353
 Translusion See Blood trans fusion
 Transillumination of breast 3632
 of eye 1444
 Transillumination of eyeball 3632
 in hydrocele of testis diagnostic 2431
 of scrotum 3632
 of sinuses 5505
 of subcutaneous tissues 3633
 Transportation in broken back (Fig) 2969
 in broken neck (Fig) 2968
 in fractures traction hitch in (Fig) 2903
 Transudates characteristics (Table) 3758
 in spinal cord injuries 1457
 in suspected spinal fracture 3095
 Transurethral resection in malignant prostatic
 hypertrophy 2450
 in prostatic hypertrophy 2448
 Trasentim dosage (Table) 3875
 Traube Hering wave in shock 934
 Trauma epiphyses in diff diag (Table) 2030
 joint motility in diff diag (Table) 2808
 pain in diff diag (Table) 2803
 mechanical cause of malignant dermatoses
 3213
 origin of 18
 Traumatic disturbances coma in diff diag
 (Table) 1294
 of skeletal and locomotor systems 2907
 motor systems 2957
 unconsciousness in diff diag (Table) 1294
 neuroses 1356
 psychoses 1375
 shock 932
 Travel sickness 3876
 Treatment by injection 3770
 by manipulation 3766
 methods in infancy 2740
 Treitz ligament, herniation through, 1804
 Trematode causing disease 41
 Tremors diff diag (Table) 2883
 in hyperthyroidism 1205
 in paralysis agitans 1606
 Trench fever 383
 diff diag (Table) 28
 serologic test in (Table) 60
 foot 1002
 mouth 1638
 Trend definition 1297
 Trendelenburg sign, in dislocation of hip 3229
 test 3910
 (Fig) 3930
 results (Table) 3941
 Treponema carateum 353
 genitals (Fig) 46
 heretore 353
 infection 351
 arsenicals in 121
 microdentium (Fig) 46
 pallidum culture of 331
 (Fig) 211 46
 penicillin in evaluation 111
 pertene 351
 taxonomic key to 323
 vincenti, 1698
 Triatoma as vector (Table) 42
 Tribromethanol evaluation (Table) 3857
 Trichiasis, etiology (Table) 1569
 symptoms (Table) 1569
 Trichinella spiralis in trichinosis 639
 Trichinosis, 639
 diagnosis 642
 by smear in (Table) 51
 diff diag (Table) 193 241

- Tuberculosis rest in, 267 272
 sacro iliac 2945
 of seminal vesicles 2468
 serologic test in (Table) 60
 skeletal disorders in diff diag (Table) 2935
 skin test in (Table) 60
 of spine 2912
 diff diag (Table) 694
 (Fig) 2913
 streptomycin in 267
 subclinical, 258
 complications, 259
 diagnosis 259
 laboratory data in, 259
 prognosis 259 266
 treatment, 259
 surgery and 272 3039
 susceptibility to other diseases and 272
 swelling in diff diag (Table) 2955
 symptoms, 258
 tissue immunity to 258
 treatment 266
 nonspecific 267
 ultraviolet irradiation in caution, 2796
 of urethra 2337
 vaccine therapy in 266
 verruca cutis 3239
 blastomycosis vs., 494
 diff diag (Table) 3293
 of vocal cord (Fig) 2162
 of vulva 2548
 Tuberculous chancre 2259
 diff diag (Table) 2275
 lesions of nails 3454
 mastitis 2619
 meningitis 267 1462
 diff diag (Table) 445
 myocarditis 1015
 osteo-arthritis, 2939
 peritonitis 1930
 pleurisy 257
 rheumatism 2946
 sputum (Fig) 3719
 ulcers 3262
 (Fig) 1671
 Tuberosity greater fractures of 3018
 Tuberosus sclerosis 1418
 diff diag (Table) 1539
 Tubular breathing diff diag (Table) 3542
 peplitis 2375
 nephrosis, 2372
 Tularemia 323
 animal inoculation in (Table) 58
 complications 324
 conjunctivitis 1622
 course 324
 culture in (Table) 65
 cutaneous manifestations (Table) 3246
 diagnosis 325
 methods (Table) 3248
 by meat in (Table) 31
 diff diag (Table) 174 1415
 (Fig) 319
 fly as vector in (Table) 42
 glandular 324
 lymphadenopathy in, diff diag (Table) 1196
 ocular 1604
 oculoglandular 323
 penicillin in, evaluation, 111
 pneumonitis, 2192
 Tularemia, prevention 326
 prognosis 325
 quarantine data on (Table) 67
 rash in diff diag (Table) 172
 serologic test in (Table) 60
 signs 323
 skin lesions in, diff diag (Table) 3219
 symptoms other than rash in, diff diag (Table) 2790
 tick as vector in (Table) 31
 treatment, 325
 typhoidal 324
 ulceroglandular 323
 Tumors 569
 abdominal hypogastric diff diag (Table) 2621
 in left lower quadrant diff diag (Table) 1878
 in left upper quadrant diff diag (Table) 1849
 in right lower quadrant, diff diag (Table) 1884
 in right upper quadrant diff diag (Table) 1957
 solid diff diag (Table) 1759
 of adrenal cortex 1278
 diff diag (Table) 919
 medulla, 1264
 ascites in diff diag (Table) 1921
 asthenia in diff diag (Table) 2891
 benign 569
 diff diag (Table) 3210
 excision technic, 2935
 malignant changes possible in hist 3204
 of bladder 2322
 bone 2835 See also *Bone tumors*
 diff diag (Table) 2934
 osteomyelitis and diff diag 2936
 radiotranslucency in, diff diag (Table) 2906
 of brain 1419
 electrocardiogram in (Fig) 837
 electrocardiographic changes in 803
 hypertension vs 909
 incision (Table) 1490
 torulosis vs 493
 of chest wall diff diag (Table) 3523
 cutaneous 3139
 definition 3104
 dermatoses characterized by diff diag (Table) 3210
 epigastric diff diag (Table) 1814
 of eye 1567
 clinical (Table) 1546
 of female reproductive system 2547
 giant-cell swelling in diff diag (Table) 2955
 glomus 3207
 (Fig) 3201
 of head, benign diff diag (Table) 2774
 in hypogastrium diff diag (Table) 2621
 unguinal, diff diag (Table) 3092
 of intestines, benign, 1888
 of involuntary nervous system 1401
 jaundice with, diff diag (Table) 1954
 of jaw diff diag (Table) 1705
 joint pain in, diff diag (Table) 2803
 of kidney 2326
 of liver 1962
 diff diag (Table) 1957

- Tubal pregnancy 2657
 (Fig) 2659
 laboratory findings in 2660
 rupture in, diff diag 2660
- Tube(s) feeding 1750
 formula 1665
 stomach 1750
 Ewald 1750
 Levine, 1751
 Miller Abbott, treatment by 1823
 Rehfuess 1750
- Tuber vegetables food value of 645
- Tubercle bacillus bacteriology 252
 chemistry 252
 colony in 189
 cultivation 252
 demonstration in renal tuberculosis 2350
 dissociation 252
 epidemiology 253
 in gastric contents 5726
 smears (Table) 51
 in urinary specimen (Fig) 2690
 zoon 256
- Tuberculous 262 2205
 diff diag (Table) 3219
 papulonecrotic, diff diag (Table) 412
- Tuberculin tests 262
 interpretation, 264
 patch (Fig) 264
 technic 266
 in pneumonitis evaluation, 2205
 positive (Fig) 263
 reaction to 263
 in rheumatism 2216
 in subclinical tuberculosis 259
 technic of 263 561
 in tuberculosis prevention 273
 in tuberculous pneumonitis evaluation, 2205
 therapy in eye diseases, dosage 1331
 in lupus vulgaris 2265
 in sarcoidosis 2272
 in tuberculosis 266
- Tuberculosis 252
 activation by other diseases 272
 of adrenal glands 1272
 animal inoculation in (Table) 63
 of ankle 2245
 (Fig) 2245
 of arm joints 2245
 asymptomatic (Fig) 260
 bed rest in 267
 of bone, predisposing to fracture 2282
 bovine epidemiology 253
 bronchopneumonia, acute 2189
 of bulbo urethral glands 2470
 calcium in 603
 of carpus (Fig) 2246
 case finding in 265
 cervical spine disturbances in diff diag
 (Table) 2218
 of cervix uteri 2007
 chest film (Fig) 4037
 of choroid (Fig) 1464
 climatotherapy in 263
 clinical manifestations 258
 course 266
 culture in (Table) 55
 cutaneous variations 3205
 (Table) 3216
- Tuberculosis cutis colloquativa See *Scrofula-
 derma*
 ichthyoides 2269
 laposa See *Lupus vulgaris*
 officinalis See *Tuberculosis ulcers*
 papulonecrotica, 2270
 dermatosis in, diff diag (Table) 3212, 3380
 diagnosis 264
 by smear in (Table) 51
 diet in 269
 diff diag (Table) 193 406
 dissemination (Fig) 257
 stage 256
 epidemiology 253
 of epididymis 2462
 fever in diff diag (Table) 1006
 of foot 2245
 genital female 2610
 gold therapy in 267
 of hip 2242
 (Fig) 2244
 immunity to 208
 indurative subcutanea See *Erythema in-
 duratum*
 in infancy, diff diag (Table) 3147
 intestinal 1860
 end organ 1862
 (Fig) 1860
 iodides in, 609
 joint pain in diff diag (Table) 2803
 of knee 2245
 (Fig) 2244
 laryngitis 2163
 of lung (Fig) 254
 primary (Fig) 255
 lymphadenopathy in diff diag (Table) 1196
 marriage and 273
 methods of diagnosis (Table) 2246
 military acute 267
 of choroid (Fig) 1464
 (Fig) 257
 pulmonary form of 261
 typhoidal form of 261
 Mycobacterium (Fig) 29
 ocular 1603
 oral, 1672
 organ, chronic 257
 pathogenesis 254 257
 pathology of (Fig) 253
 penicillin in evaluation 111
 of penis 2453
 pericarditis 1009
 pneumonic See *Pneumonia tuberculosis*
 pregnancy and, 2671
 prephthical diagnosis 259
 prevention, 273
 primary complications 259
 diagnosis 269
 diff diag 259
 prognosis, 259 266
 signs 258
 stage 255
 treatment 259
 prognosis 266
 prostatic in 267
 of prostate gland 2472
 quarantine data on (Table) 67
 renal, 2347
 (Fig) 2347 2348 2349
 lesions in 2348

- Tyrothricin in eye diseases 1533
 penicillin vs 106
 in pneumococcal infection 201
 in respiratory disturbances, dosage 2029
 in rhinitis 2115
 in sinusitis 2123
 in skin infections 3131
 in staphylococcal infections 151
 in streptococcal infection 106
 (Table) 103
 toxicity 105
- U factor, 631
- Ulcer(s) balsam of Peru in prescription 3114
 benzocaine in prescription 3114
 corneal 1629
 cautization 1557
 thermophore for 1549
 definition, 3101
 duodenal electrocardiographic changes in 809
 (Fig) 836
 (Fig) 1 86
 perforation (Fig) 1700
 of eyelid 1600
 of frenum in pertussis 28
 gastric gastric contents in (Table) 3726
 iodolent, acetyl beta methykholine chloride in 3112
 jejunal (Fig) 1795
 of lingual frenum treatment, 1639
 of nasal septum 2114
 oral diff diag (Table) 1668
 pain typical 1784
 pertain paste in, prescription 3125
 peptic 1780
 bleeding treatment, 1794
 diff diag 1784
 of esophagus 1737
 (Fig) 1757
 pain in right upper quadrant in diff diag (Table) 1059
 perforation in 1790
 treatment 1790
 perforating 3228
 diff diag (Table) 3297
 (Fig) 3229
 pharyngeal, 2101
 tender See Basal-cell epithelioma
 of skin, *B. brevis* extracts in 105
 diff diag (Table) 3218
 of stomach arteriovenous rotic 1763
 (Figs) 1782, 1785
 phytohemorrh in (Fig) 1807
 tune table 1792
 of toes perforating diff diag (Table) 3219
 tuberculous 3222
 (Fig) 1671
 x ray also vera in 3113
 zinc peroxide paste in 3132
- Ulceration 3286
 in paratuberculosis nodosa 1028
 treatment 3286
- Ulcerative colitis s chronic nonspecific 1836
 treatment, 1859
 diffuse (Fig) 1858
 radiography in, 1859
- Ulceroglandular tularemia 323
- Ulnar block anesthesia, 3220
- Ulnar coronoid fracture 3024
 treatment (Table) 3014
 fracture 3026
 (Fig) 3026
 nerve injuries, motor signs in (Table) 1470
 shaft fracture treatment (Table) 3015
- Ultraviolet irradiation 3791
 in atopic dermatitis 3315
 common cold and 392
 evaluation, 2118
 contraindications 3795
 in erysipelas 170
 in eye diseases, 1550
 in herpes zoster 457
 indications 3795
 lamp (Fig) 3795
 in lichen planus 3393
 in papulonecrotic tuberculid 3270
 in rheumatic fever 194
 in scorbies 3451 3484
 in tuberculosis 270
 caution 3796
 light, filtered in diagnosis of tinea capitis, 3303
 rays range 3793
- Umbilical discharge diff diag (Table) 3357
 hernia 1799 3092
 complicating pertussis 292
 region pain in, diff diag (Table) 1887
- Umbilicus blue discoloration in acute pancreatitis 1940
 infection 2785
 in newborn, care 2748
- Unanal dermatitis 3193
 diff diag (Table) 3298
- Uncinariasis 1903
- Unconscious mind Freud's definition 1337
- Unconsciousness diff diag (Table) 1294
- Undecyl n acid in mycosis 3131
 in superficial dermatophytes 3307
- Underwater exercise (Table) 3791
- Undulant fever 314 See also *Brucellera*
- United States See also Army and Navy
 endemic typhus in 375
 Pharmacopoeia 3799
- Urethra a paste boot, 3938
 solution prescription 3157
 starch lotion, prescription 3192
- Upper extremities See *Extremities upper*
- Urachus cyst and fistula (Table) 2267
 persistence manifestations (Table) 2287
- Urea, 694
 clearance test 2245
 in congestive failure dose 250
 as diuretic dosage 2260
 nitrogen in blood (Table) 5
 stibamine description 133
 therapeutic 3223
- Uremia, 2275 2278
 acidosis in diff diag (Table) 721
 fever in diff diag (Table) 718 1006
 in hypertension, 609
 urea administration in 694
- Uremic colic in 1831
 pericarditis 2279
 stomatitis 2279
- Ureter(s) anatomy 2245
 angularity 2305
 calculi 2314
 catheterization, 2249

- Tumors of male reproductive organs** 2439
 malignant See *Carcinoma* and specific names
 of tumors
 of nails 3454
 of neck diff diag (Table) 3514
 oral 1714
 diff diag (Table) 1668
 of oropharynx 2070
 ovarian See *Ovarian tumors*
 pain in diff diag (Table) 2941
 of pancreas diff diag (Table) 1957
 of parathyroids 1233
 of peripheral nerves 1435
 phantom in intestinal neuroses 1847
 pheochromocytoma diff diag (Table) 910
 of pineal gland 1184
 pleural effusion in diff diag (Table) 2033
 psychoses and 1391
 of renal pelvis 2926
 of respiratory tract, 2066
 of scrotum diff diag (Table) 2441
 skeletal 2335
 of skin 3199
 of spinal cord 1430
 (Fig) 1431
 spleen 1132
 of stomach benign 1814
 diff diag (Table) 1814
 swellings in diff diag (Table) 2955
 of ureter 2326
 of uterus (Fig) 8
 of voluntary nervous system 1419
- Turbineotomy indications for** 3994
- Turk's bath** (Table) 3791
- Turk's cells** 3703
- Turpentine poisoning clinical manifestations**
 (Table) 761
 diagnosis (Table) 761
 occupations susceptible to (Table) 761
 treatment (Table) 761
- Turtle serum** 287
- Tutocaine** 8915
- T wave abnormal analysis** (Table) 807
 description 804
 normal analysis (Table) 807
- T₁ wave inverted in electrocardiogram** (Fig)
 835
- T₂ wave inverted in electrocardiogram** (Fig)
 835
- Twitchings** diff diag (Table) 2883
- Two step test of cardiac function** 789
 trips in (Table) 790
- Tympanic membrane normal** (Fig) 2142
 retracted (Fig) 2142
- Tympanites** diff diag (Table) 1878
- Tympany** 3535
 diff diag (Table) 3538
- Typhoid fever** 223
 bacteriology 224
 carrier treatment 239
 complications 234
 culture in (Table) 55
 death from 235
 defervescence in 231
 diagnosis 232
 diff diag (Table) 23 193 241 413
 fly as vector in (Table) 42
 focal nephritis in, 2366
 immunity after 76
 immunity to Widal test for 227
- Typhoid fever incubation period** 229
 in infancy diff diag (Table) 2731
 invasion period of 230
 ocular manifestations 1604
 oral manifestations 1670
 penicillin in evaluation 110
 Peyer's patches in (Fig) 208
 prevention 233
 quarantine data (Table) 67
 rash in diff diag (Table) 3233
 relapse in 232
 rose spots in (Fig) 231
 serologic test in (Table) 61
 skeletal disorders in diff diag (Table)
 2935
 treatment 236
 variations 232
- Mary** 227
- vaccine administration** (Table) 80
 technic 238
 evaluation 79
 for hyperpyrexia method 1879
 for skin vasodilatation 3985
 in thrombo-angitis obliterans 1031
- Typhoidal state** diff diag 241
- tularemia** 324
- Typhopneumonia** 2189
- Typhus** 369
 American 375
 animal inoculation in (Table) 63
 (Fig) 63
 tests in 373
 circulatory disturbances in (Table) 954
 classification (Table) 367
 clinical manifestations 370
 complement fixation tests in 373
 complications 371
 course 371
 culture in (Table) 55
 diagnosis 372
 diff diag (Table) 413
 endemic, 375
 diff diag 376
 epidemic route = vector in (Table) 42
 European 369
 immunity after 76
 louse as vector in (Table) 42
 murine, 375
 penicillin in, 374
 prevention 374
 D D T in 374
 prognosis in 374
 quarantine data on (Table) 67
 rash in, diff diag (Table) 172
 (Fig) 370
 scrub (Fig) 362
 serologic test in (Table) 61
 skin test in (Table) 61
 sulfonamides in 374
 symptoms other than rash in diff diag
 (Table) 2790
 temperature curve in 45
 treatment, 374
 vaccine, 375
 evaluation, 79
- Tyroxidine pharmacology** 103
- toxicity** 105
- Tyrosine** 103
 antibiotic activity 103
 dosage 105

Tyrothricin in eye diseases, 1553

- penicillin vs., 106
- in pneumococcal infection 204
- in respiratory disturbances, dosage 2029
- in rhinitis 2116
- in sinusitis, 2123
- in skin infections 3131
- in staphylococcal infections 154
- in streptococcal infection, 166
- (Table) 103
- toxicity 105

U FACTOR, 631

Ulect(s) balsam of Peru in prescription 3114

- benzocaine in prescription, 3114
- corneal 1622
 - cauterization 1357
 - thermophore for 1549
- definition, 3104
- duodenal electrocardiographic changes in 803
 - (Fig) 636
 - (Fig) 1 86
 - perforation (Fig) 1790
- of eyelid 1609
- of frenum in pertussis, 28
- gastric gastric contents in (Table) 3726
- indolent, acetyl beta methylcholone chloride in 3112
- jejunal (Fig) 1795
- of lingual frenum treatment, 1689
- of nasal septum 2114
- oral, diff diag (Table) 1669
- pain typical, 1784
- pectin paste in, prescription, 3123
- peptic, 1780
 - bleeding treatment, 1794
 - diff diag 1784
 - of esophagus, 1737
 - (Fig) 1737
 - pain in right upper quadrant in, diff diag (Table) 1953
 - perforation in 1790
 - treatment 1790
- perforating 3123
 - diff diag (Table) 3297
 - (Fig) 3229
- pharyngeal 2101
- rodent. See *Basal-cell epithelioma*
- of skin, B brevis extracts in, 103
- diff diag (Table) 3218
- of stomach arteriosclerotic, 1763
 - (Fig) 1782, 1785
 - phytobezoar in (Fig) 1807
- tune table 1792
- of toes perforating diff diag (Table) 3219
- tuberculous, 326
 - (Fig) 1671
- x ray aloe vera in 3113
- zinc peroxide paste in 3132

Ulceration 3986

- in periarthritis nodosa, 1028
- treatment, 3986

Ulcerative colitis, chronic nonspecific 1846

- treatment, 1859
- diffuse (Fig) 1858
- radiography in, 1859

Ulceroglandular tularemia 323

Ulnar block anesthesia, 3920

Ulnar coronoid fracture, 5024

treatment (Table) 3014

fracture, 5026

(Fig) 5026

nerve injuries, motor signs in (Table) 1490

shaft, fracture treatment (Table) 3015

Ultraviolet irradiation, 5794

in atopic dermatitis, 3345

common cold and 332

evaluation, 2118

contraindications, 5796

in erysipelas, 170

in eye diseases, 1350

in herpes zoster 457

indications, 5795

lamp (Fig) 5795

in lichen planus, 3395

in papulonecrotic tuberculid 3770

in rheumatic fever 194

in seborrhea 3431 3434

in tuberculosis 370

caution, 3796

light, filtered, in diagnosis of tinea capitis, 3303

rays, range, 5793

Umbilical discharge diff diag (Table) 3357

hernia, 1799 3092

complicating pertussis 292

reapon pain in, diff diag (Table) 1837

Umbilicus blue discoloration in acute pancreatitis 1940

infection 2785

in newborn, care 2748

Umbilical dermatitis 3193

diff diag (Table) 3 111

Uncinariasis 1903

Unconscious mind Freud's definition 1357

Unconsciousness, diff diag (Table) 1294

Undecylenic acid in mycosis 3131

in superficial dermatophytoses 3307

Underwater exercise (Table) 3791

Undulant fever 314 See also *Brucellosis*United States see also *Army and Navy*

endemic typhus in, 375

Pharu acopoeta, 5792

Urea s paste boot, 3293

solution prescription, 3137

starch lotion, prescription, 3132

Upper extremities See *Extremities upper*

Utrachus cyst and fistula (Table) 2487

persistence manifestations (Table) 2287

Urea, 394

clearance test 2245

in co-gastric failure dose 950

as diuretic dosage 2260

nitrogen in blood (Table) 5

stibamine description 133

therapeutics 3225

Uremia, 2275 2278

acidosis in, diff diag (Table) 721

fever in, diff diag (Table) 718 1096

in hypertension, 203

urea administration in 594

Uremic colitis 1841

pericarditis, 2279

stom titis, 2279

Ureter(s) anatomy 2245

angularity 2305

calculi, 2314

catheterization, 2269

- Tumors of male reproductive organs 2439
 malignant See *Carcinoma* and specific names of tumors
 of nails 3454
 of neck diff diag (Table) 3514
 oral 1714
 diff diag (Table) 1669
 of oropharynx 2070
 ovarian See *Ovarian tumors*
 pain in diff diag (Table) 2041
 of pancreas diff diag (Table) 1957
 of parathyroids 1233
 of peripheral nerves 1435
 phantom in intestinal neuroses 1847
 pheochromocytoma diff diag (Table) 910
 of pineal gland 1184
 pleural effusion in diff diag (Table) 2033
 psychoses and 1391
 of renal pelvis 2326
 of respiratory tract, 2066
 of scrotum diff diag (Table) 2441
 skeletal 2836
 of skin 3193
 of spinal cord 1430
 (Fig) 1431
 spleen 1132
 of stomach benign 1814
 diff diag (Table) 1814
 swellings in diff diag (Table) 2955
 of ureter 2326
 of uterus (Fig) 8
 of voluntary nervous system 1419
 Turbectomy indications for 3991
 Turkish bath (Table) 3791
 Turk's cells 3703
 Turpentine poisoning clinical manifestations (Table) 761
 diagnosis (Table) 761
 occupations susceptible to (Table) 761
 treatment (Table) 761
 Turtle serum 267
 Tutocaine 8013
 T wave abnormal analysis (Table) 807
 description 804
 normal analysis (Table) 807
 T₁ wave inverted in electrocardiogram (Fig) 853
 T₂ wave inverted in electrocardiogram (Fig) 853
 Twitchings diff diag (Table) 2883
 Two step test of cardiac function 789
 traps in (Table) 790
 Tympanic membrane normal (Fig) 2142
 retracted (Fig) 2142
 Typhaxites diff diag (Table) 1878
 Tympany 3535
 diff diag (Table) 3539
 Typhoid fever 225
 bacteriology 224
 carrier treatment 239
 complications 234
 culture in (Table) 55
 death from 235
 defervescence in 231
 diagnosis 232
 diff diag (Table) 93 103 241 413
 fly as vector in (Table) 42
 focal nephritis in 2366
 immunity after 76
 immunity to Widal test for 227
 Typhoid fever incubation period 229
 in infancy diff diag (Table) 2731
 invasion period of 230
 ocular manifestations 1604
 oral manifestations 1670
 penicillin in evaluation 110
 Peyer's patches in (Fig) 228
 prevention 233
 quarantine data (Table) 67
 rash in diff diag (Table) 3233
 relapse in 232
 rose spots in (Fig) 231
 serologic test in (Table) 61
 skeletal disorders in diff diag (Table) 2945
 treatment 236
 variations 237
 Mary 207
 vaccine administration (Table) 60
 technic, 238
 evaluation 79
 for hyperpyrexia method 1379
 for skin vasodilatation, 2085
 in thrombo-angitis obliterans 1031
 Typhoidal state diff diag 241
 calcareous 324
 Typhopneumonia 2183
 Typhus 369
 American 375
 animal inoculation in (Table) 83
 (Fig) 63
 tests in 373
 circulatory disturbances in (Table) 361
 classification (Table) 367
 clinical manifestations 370
 complement fixation tests in 378
 complications 371
 course 371
 culture in (Table) 63
 diagnosis 372
 diff diag (Table) 413
 endemic 375
 diff diag 376
 epidemic mite as vector in (Table) 42
 European 369
 immunity after 76
 louse as vector in (Table) 42
 murine, 375
 penicillin in, 374
 prevention, 374
 D D T in 374
 prognosis in, 374
 quarantine data on (Table) 67
 rash in diff diag (Table) 172
 (Fig) 370
 scrub (Fig) 382
 serologic test in (Table) 61
 skin test in (Table) 61
 sulfonamides in 374
 symptoms other than rash in diff diag (Table) 2790
 temperature curve in 45
 treatment, 374
 vaccine 375
 evaluation 79
 Tyrocidine pharmacology 105
 toxicity 105
 Tyrothricin 105
 antibiotic activity 105
 dosage 105

- Urinary system contrast roentgenography in** (Table) 374
- diagnosis methods, 2234
 - examination s, 2247
 - by special t 2244
 - infections 2334
 - injuries to 2298
 - laboratory tests for indications 2240
 - neurogenic abnormalities 2331
 - pathologic physiology 2264
 - in pregnancy 2674
 - specialist procedures 2263
 - on spermatic cord (Fig) 3636
 - treatment 2244
 - tumors 2322
 - ocular disturbances 2329
 - test for renal function 2240 3687
 - tract duplication (Figs) 2249
 - radiography 2250
- Urination (frequency in bladder tumors) 2323**
- Urine acetone in test for 3680**
- analysis routine 3667
 - (Table) 3667
 - backflow 2270
 - bacteria in 3684
 - bacteriologic examination 3690
 - bile in, tests for 3686
 - "blackwater" in peroxymal hemoglobinuria, 1075
 - blood in benzidine test 3685
 - collection of for bacteriologic examination 33
 - color deviations of diff diag 3660
 - concentration test, 3687
 - crystals (Fig) 3681
 - cultures 3640
 - in tuberculosis milary 261
 - in typhoid fever 233
 - cylindroids in 3683
 - dark in Charcot fever 2004
 - diacetic acid in tests for 3680
 - (Fig) 3678
 - dilution test 3687
 - epithelial cells in 3684
 - erythrocytes in 3683
 - (Fig) 3683
 - examination for blood in fracture: lower lumbar region (Table) 2245
 - in infancy: indications 239
 - fermentation test 3675
 - formation 2229
 - diagram (Fig) 2228
 - incontinence diff diag (Table) 265
 - in spina bifida, 2281
 - indican in test for 3685
 - laboratory tests 3667
 - mucous threads in (Fig) 3683
 - parasites in 3684
 - periarthritis nodosa 1028
 - pus cells in 3684
 - (Fig) 3684
 - reaction routine 3668
 - reaction cystotomy in 2258
 - diff diag (Table) 264
 - on strigine in dosage 222
 - postoperative treatment, 4018
 - schistosomes in metastomum in, 3683
 - (Fig) 3685
 - sediments (Fig) 1894
- Urine sediments microscopy 3680**
- in aback 237
 - specific gravity of in azotemia 2280
 - normal 3671
 - test 3671
 - specimen catheterized 3666
 - collection 3666
 - fractional, 3666
 - night and morning 3666
 - preservation 3667
 - three glass test 3666
 - twenty four hour 3666
 - sulfonamide concentration 3690
 - tests, 3666
 - albumin 3672
 - bacteriologic, indications 3663
 - Bence-Jones protein 3673
 - Benedict, 3674
 - chemical, indications 3663
 - color 3667
 - fermentation 3675
 - pregnancy 3663
 - quantitative, 3663
 - reaction 3663
 - renal function, See *Renal function tests*
 - special (Table) 3663
 - specific gravity 3671
 - sugar 3673
 - three glass 3666
 - transparency 3663
 - tubercle bacilli in (Fig) 3690
 - urobilin in, test for 3687
 - urobilin in urine test for 3686
 - urobilinogen test for 3686
 - increased excretion 1948
 - in sulfonamide therapy 93
- Urogastrone 1891**
- Urogram excretion, normal (Fig) 225**
- Urography excretion, 2251**
- indication 2245 225
 - in pyelonephritis 2338
 - retrograde indication 245
 - in urolithiasis 2316
- Urolithiasis See Urinary lithiasis**
- Urologist indications for consultation 3653**
- treatment by 2263
- Urology See Urinary system**
- Urotropin dosage 257**
- Urticaria, 3345**
- acute treatment 3348
 - allergen in 553
 - autohemotherapy in 21
 - chronic treatment 3349
 - dermographica 3351
 - diff diag (Table) 3346
 - due to drugs, 3339
 - (Fig) 3347
 - hemalis 3351
 - diagnosis 3171 3351
 - pigment, 3158 (Fig) 3159
 - diff diag (Table) 413 3269 3346
 - in infancy diff diag (Table) 3147
 - rash in diff diag (Table) 383
 - solaris 3176 3351
- Urticarial Drugs 3800**
- Uterus adenocarcinoma (Fig) 2562**
- anatomy 3644
 - anomalies, 2530
 - (Fig) 2530
 - antiversion, 2537

- Ureter(s) catheterization indications 2244
 diverticula differential features (Table) 2287
 (Fig) 2285 2288
 duplication (Fig) 2298
 ectopic openings (Table) 2287
 injuries to 2304
 kinking 2305
 (Fig) 2297
 lesions schematic drawing (Fig) 2266
 leukoplakia 2316
 manipulation contraindications 2321
 value 2321
 strictures 2305
 (Fig) 2303
 inflammatory 2346
 (Table) 2287
 transplantation indications 3095
 tuberculosis 2349
 tumors 2326
 in urinary obstruction alterations in 2269
 Ureteritis 2346
 cystitis 2346
 Ureterocele differential features (Table) 2287
 (Fig) 2271
 Ureterolithotomy indications for 3093
 Ureteronephrectomy in renal tuberculosis 2351
 Urethane evaluation (Table) 3037
 Urethra abscess 2300
 absence (Table) 2286
 atresia 2286
 bacteria in 149
 calculi 2319
 dilatation 2254
 discharge diff diag (Table) 2340
 disturbances leukorrhea in 2333
 in pelvic fractures 3011
 diverticula symptoms (Table) 2286
 duplication symptoms (Table) 2286
 female anatomy 2643
 imperforate (Table) 2266
 injuries external 2298
 internal 2299
 irrigation 2254 2286
 lesions urethroscopic views (Fig) 2246
 male anatomy 2593 2634
 stenosis congenital (Table) 2286
 strictures acquired 2299
 congenital 2299
 gonorrheal (Fig) 2267
 treatment, 2300
 tuberculosis 2337
 in urinary obstruction alterations in 2269
 valves disturbances (Table) 2286
 Urethral endoscopy 2247
 indication 2245
 injections syringes for (Fig) 2254
 silver nitrate in, 3187
 instrument passage of technic (Figs)
 2235 2236 2237 2238
 irrigations 2258
 Urethritis See also *Urethra discharge*
 gonorrheal 2338
 complications 2339
 nongonorrheal 2336
 syphilitic, 2337
 trichomonal 2338
 Urethrocele 2297
 Urethrolithotomy indications for 3093
 Urethrorrhea, 2338
 Urethroscopy 2247
 in infancy indications for 2735
 Urethrosemlinal backflow 2270
 Urgency of urination diff diag (Table) 2323
 Uric acid in blood (Table) 8
 increase diff diag (Table) 737
 chemistry 593
 crystals in gout 18
 excretion 593
 metabolism disturbances 737
 Urinal use of in infectious diseases 69
 Urinary abscess surgery in 2301
 antiseptics 2266
 list, 3897
 in pregnancy 2644
 bladder male anatomy 3635
 calculi See *Urinary lithiasis*
 casts types 3682
 colic antispasmodics in 2262
 disturbances abdominal disturbances in,
 diff diag (Table) 1746
 apo-perineal pain in diff diag (Table)
 1915
 of infancy list 2759
 involuntary nervous system and (Table)
 1937
 pain to generalized diff diag (Table) 1748
 in hypogastrium diff diag (Table)
 2302
 in left lower quadrant, diff diag
 (Table) 1807
 in left upper quadrant diff diag
 (Table) 1912
 in right lower quadrant diff diag
 (Table) 1880
 in right upper quadrant diff diag
 (Table) 1989
 in sulfonamide therapy ■
 extravasation 2300
 fistulae 2346
 incontinence diff diag (Table) 2265
 early sign in tabes dorsalis 1465
 infections 2334
 bacteria in 2334
 in infancy diff diag (Table) 2731
 pathogenesis 2334
 postoperative treatment 4018
 vitamin A deficiency and, 2335
 lithiasis 2311
 chemical dissolution 2320
 (Figs) 2312 2314
 manipulation in, 2321
 operative therapy 2321
 prevention, 2319
 obstruction, 2264
 bladder in, 2268
 causes (Table) 2263
 diagnosis 2272
 diagnostic examinations for (Table) 2263
 (Fig) 2266
 kidney in 2268
 pathology 2267
 treatment 2272
 ureter in 2268
 urethra in 2269
 passageways duplication (Fig) 2289
 sediment, appearance 3631
 sepsis in pregnancy 2644
 system 2227
 congenital malformations 2234
 (Table) 2236

- Vaginitis gonorrheal** 2586
 mycotic 2503
 acute 2622
 estrone suppositories in 3119
 (Fig) 2596
 trichomonas 2598
 (Fig) 2597
Vagotomy with gastrectomy 1760
 in peptic ulcer 1796
Vagotonia 1323
Vagus nerves function 777
 pharmacology 779
 stimulation technic of 851 882
Valgus foot, congenital 3085
Valley fever 409 See also *Coccidioidomycosis*
Valvular heart defects congenital 961
 congestive failure and, 975
 pregnancy and 975
 rheumatic defect of electrocardiogram
 in (Fig) 837 842 843 845 846
 surgery and 975
 (Table) 970
 treatment 975
 disease prognosis in (Table) 974
 function, 777
Valvulitis syphilitic aortic 1026
Van den Bergh reactions 1947
Van der Scheer five-day fever 408
Vanishing cream prescription 8151 8156
Vapor(s) poisonous 744
 diff diag (Table) 746
Vaquez Oler disease 1003 See also *Iof*
 cythemia
Varicella 420
 encephalitis 440
 oral manifestations of 1670
 throat in diff diag (Table) 3601
Varicelliform syphilids 3285
Varices esophageal 1723
 (Fig) 1720
 gastric 1762
Variocoele 2433
 bilateral (Fig) 2434
 (Table) 969
 faulty posture and 3059
Variocoelectomy indications for 3994
 technic 3939
 (Fig) 3999
Varicose veins causes (Table) 969
 complex 3371
 excision 3939
 injection 3939
 (Fig) 394
 technic 3941
Variola 424 See also *Smallpox*
Varicelliform syphilids 3285
Vas deferens anatomy 2397 2638
 gonorrhea 2460
 infections 2460
 injuries to 2455
 ligation of in impotence 2410
 stricture 2456
 syphilis 2460
 tuberculous 2466
 tumors 2445
Vascular disease peripheral diff diag (Table)
 996
 disturbances See also *Circulation d* *sturb*
 ances
 exophthalmos in diff diag (Table) 1575
Vascular disturbances, orbital disturbances in,
 diff diag (Table) 1615
 of respiratory system 2036
 spasms in diff diag (Table) 2833
 splenomegaly in, diff diag (Table) 1120
 stomach in 1762
 of urinary system 3329
 failure in shock (Table) 929
 lesions of skin (List) 3234
 obstruction edema in, 709
 system 4
 tension, alterations in 900
 thrombosis in peripheral vascular disease 925
Vasculature calcium metabolism and 2793
Vasculators in circulatory disturbances 851
Vasectomy technic 3938
Vasodilation, epinephrine 3680
Vasoconstrictors in common cold 2118
 for eyes 1548
 for hay fever 2003
 in infancy dosage 2746
 in nasal installations 2027
 in respiratory disturbances 2029
 in sinusitis prescription 2127
Vasodepressor carotid sinus syncope 995
Vasodilatation methods of producing 3987
Vasomotor nerves function, in circulation 782
 rhumus 2007
Vasospasm paravertebral nerve block for 845
Vasovagal syncope 321 1400
Vector disease definition 64
 insects as (Table) 42
 role of in disease 41
 in sickroom 70
Vegetable fat food value 650
 oils food value of 650
Vegetables classification (Table) 645
 composition (Table) 646
 food value 644
 in infant feeding 2755
Vehicles 3320
 choice of 3321
 speed of absorption and 3331
Veins anatomy 3578
 contraction of in pericarditis 1011
 coronary function 774
 innervation of in circulation 783
 jugular phlebitis of 2157
 of legs thrombosis ligation of 11 5
 obstruction of edema in 710
 physiology 783
 portal chronic occlusion 1960
 thrombosis acute 1960
 retinal, obstruction 1589
 obstruction due to pernicious anemia
 (Fig) 1689
 thrombosis (Fig) 1588
 asphenous ligation 3942
 thrombosis 711
 varicose See *Varicose veins*
Velpeau bandage in clavicle fractures 3017
Vena cava inferior obstruction edema in 710
 superior dilatation of fluoroscopic ex
 amination 900
 obstruction of edema in 710
 thrombus in (Fig) 12
Veneral infections of female, antibiotic
 therapy in 2584
 of male antibiotic therapy in dosage 2452
 quarantine data on (Table) 67

- Uterus bleeding electrocardiographic changes
 in 808
 (Fig) 817
 carcinoma of 2562
 cervix See *Cervix uteri*
 chorio-epithelioma (Fig) 2656
 disturbances leukorrhea in diff diag
 (Table) 2585
 fibroids 2554
 abdominal pain in left lower quadrant,
 diff diag (Table) 1866
 in right lower quadrant diff diag
 (Table) 1880
 appearance 2555
 (Fig) 2554
 hyaline degeneration in 2555
 roentgentherapy versus surgery 2556
 treatment indications for 2556
 growths backache and 2556
 hemostatics 2512
 inversion 2544
 involution 2715
 myomas 2554
 (Fig) 2554
 pathology 2554
 physical examination 2648
 polyps 2538
 postpartum care of 2717
 in pregnancy 2621
 (Fig) 2622
 measurements 2621 2630
 prolapse pessary in 2543
 retrodisplacements 2537
 diagnosis 2538
 pessaries in 2538
 replacement (Figs) 2539
 surgical repair 2 11
 types 2538
 sarcoma 2564
 sedatives list 2897
 prescription 2512
 tumor of (Fig) 11
 Uveal tract abnormalities 1639
 Uveitis 1632
 Uveoparotid fever Heerfordt's 1635
 Uvula angioneurotic edema, diff diag (Table)
 2733
 carcinoma 2070
 diphtheria (Fig) 303
 U wave description 804
- VACATION 3761
 Vaccination 499 See also *Vaccines*; *Vaccinia*
 and specific diseases
 after-care in 430
 complications 432
 contra indications to 432
 course (Fig) 430 431
 intra-dermal technic 429
 multiple puncture technic 429
 scratch technic 429
 tetanus after 295
 yellow fever 480
 Vaccine(s) in active acquired immunity 77
 autogenous in eye diseases 1551
 in brucellosis 321
 evaluation, 78
 catarrhal evaluation 79
 cholera 250
 cholera injection 250
 vibrio evaluation 78
 cold evaluation 79
 evaluation 892 2118
 equine encephalitis evaluation 79
 in Lwings tumor 2847
 influenza evaluation 79
 list 78
 measles evaluation 79
 oral, 79
 pertussis evaluation 78
 in immunization 283
 plague bacillus 322
 evaluation 79
 pneumococcal evaluation 207
 poliomyelitis evaluation 79
 rabies 440
 evaluation 111
 in rheumatoid arthritis 2920
 in Rocky Mountain spotted fever 380
 evaluation 79
 smallpox 429
 evaluation 79
 staphylococcus evaluation 78
 St Louis encephalitis evaluation 79
 in streptococcal infection 166
 therapy focal reactions to 80
 typhoid bacillus evaluation 79
 for hyperpyrexia 1880
 yphus 480
 evaluation 79
 yellow fever 480
 evaluation 79
 Vaccinia 428
 diff diag (Table) 422 3200 3400
 general, ed 433
 diff diag (Table) 175
 Vagal carotid sinus syncope 923
 paralysis 1488
 pressure in circulatory disturbances 831
 stimulation in auricular tachycardia 882
 system 4
 Vagina absence 2529
 anatomy 3644
 bacteria in 150
 disturbances diff diag (Table) 2548
 leukorrhea in, diff diag (Table) 2585
 foreign bodies in 2534
 sarcoma 2549
 Vaginal applications (Table) 2501
 bleeding menstrual see *Menorrhagia*
 nonmenstrual diff diag (Table) 2505
 in pregnancy diff diag (Table) 2661
 prepubertal diff diag (Table) 2479
 diaphragm as contraceptive 2503
 method of application (Figs) 2503 2504
 2505
 discharge diff diag (Table) 2585
 in newborn 2778
 douches (Table) 2509
 examination technic 3648
 smears (Figs) 2406 2497
 in infancy indications 2740
 technic, 2495
 in trichomoniasis technic 2496
 speculum technic of insertion (Fig) 3647
 suppositories 2509
 tampons 2501
 varix rupture 2535
 Vaginitis acute nonspecific, 2597

- Virus(es) pneumoniae** cold agglutinin test in 8711
 streptomycin in 111
 sulfonamides on 71
 tissue affinity for 389
- Vis mediatrix naturae** 3753
- Viscera abdominal** (Fig) 3359
 distribution of nerve fibers to (Table) 1479
 in female normal (Fig) 3489
 obese (Figs) 3130 3491
- Visceral angulus** 1019 See also *Endocarditis atypical verrucosa*
 hemorrhages in infancy 2775
 pain mechanism 1478
 paravertebral nerve block for 853
 signs of faulty posture 3053
- Visceromotor reflexes** 1477
- Visceroptosis in female** (Fig) 3489
 occurrence in slender body type 3489
- Viscerotropic viruses** 389
- Vision acuity examinations for** 1531
 reduction diff diag (Table) 1638
 test for 1385
 binocular mechanism 1527
 diminution in cataract 1594
 double diff diag (Table) 1528
 duplicity theory 1532
 examinations for 3525
 physiology 1332
 process 1538
 test charts (Figs) 3028
- Vitators to infectious patients** 71
 in tuberculous therapy 271
- Visual fields color** (Fig) 1542
 defects 1642
 disturbances diff diag (Table) 1645
 examination for 1 41
 technic 3627
 irregular contractions of diff diag (Table) 1645
 in pituitary adenoma (Fig) 1158 1169
 pathway 1538
- Vital capacity definition** 2014
 determinat on 3799
- Vitamin() A** 617
 daily requirement (Table) 617
 deficiency 619
 cutaneous manifestations 3335
 follicular hyperkeratosis of (Fig) 618
 ophthalmic manifestations 1601
 oral manifestations, 1675
 in pityriasis rubra pilaris 3412
 urinary infection and 133.
 functions 617
 preparations 620
 sources 617
 therapeutics ■ 5
 therapy in keratomalacia 1633
 in leukoplakia of ureter 2347
 in monilethrix dosage 3140
 in pityriasis rubra pilaris dose age 3413
- B complex** 622
 deficiency edema in (Fig) 618
 enteritis due to 1839
 heart in 1014
 oral manifestations 1675
 (Fig) 1674
 peripheral neuritis due to (Fig) 3236
 therapy in gastritis 1812
 in seborrheic dermatitis 3433
- Vitamin(s) B therapy in typhoid fever** 239
 in urticaria, 3349
 B₁ 622
 in eye diseases 1551
 B₂ See *Piboflavin*
 C, 627
 deficiency 629
 capillary hemorrhages (Fig) 3239
 cutaneous manifestations 3238
 edema in 716
 gingivitis of (Fig) 628
 ophthalmic manifestations 1676
 oral manifestation 1676
 tests for 629
 dosage 629
 in scurvy dosage 1121
 therapeutics 3325
- D** 629
 calcium metabolism and 2799
 deficiency 621
 deformity in diff diag (Table) 2951
 kyphosis in diff diag (Table) 3062
 oral manifestations 1676
 rickets due to (Fig) 3250
 milk 656
 requirement 629
 sources 629
 therapeutics 3825
 therapy in pemphigus 3408
 in scleroderma dosage 3429
- E** 629 3325
 in amyotrophic lateral sclerosis 2880
 in menopause 2580
 therapeutics 3325
- G** See *Piboflavin*
H See *Biotin*
J 631
K 630
 deficiency 630 1111
 cutaneous manifestations 3238
 diff diag (Table) 3399
 hemorrhagic jaundice of (Fig) 3256
 (Fig) 618
 therapeutics 3325
 therapy in acute hemorrhage 1059
 in biliary tract diseases 1991
 in blood clotting 1109
- L** 631
L₂ 631
M 631
P 631
 chemical name of (Table) 616
 content in milk 634
 deficiency, in alcoholism 1394
 in bone healing 2968
 causes 616
 cutaneous manifestations 3235
 in hyperthyroidism 1209
 stone formation and 2311
 treatment in cardiac dilatation 871
- diet high in 632
 factors unknown 631
 in gram 644
 metabolism 616
 physiological names (Table) 616
 requirement of adult 661
 therapeutics 3325
 therapy in common cold 393 2117
 in fusospirochetosis 336
 in leprosy 277

- Venereal prophylaxis 318
 calomel ointment prescription in 3122
 gonorrhea 22²
 silver proteinate in dosage 2501
 wart 3091
 Venesection in polycythemia 1091
 Venom shock due to 936
 Venostasis edema in 709
 Venous blood collection, 369-1
 filling time 3383
 heart rubber sponge in ulceration 3988
 pressure 784
 determination 788
 equipment for (Fig) 789
 pulse 784
 sinuses intracranial thrombosis 1446
 thrombosis diff diag (Table) 1437
 Ventilation in sick room 70
 Ventricle aneurysm 993
 brain, reaction pattern 1474
 defects (Fig) 1424 1425
 left, aneurysm (Fig) 797
 cause (Table) 968
 manifestation (Table) 968
 fluoroscopic examination of 795
 right fluoroscopic examination of 795
 Ventricular beat, premature electrocardio-
 graphic diagnosis of 819
 fibrillation 849
 electrocardiographic diagnosis 811
 hypertrophy manifestation 869
 puncture in infancy indications 2737
 technic 8783
 septal defect sign (Table) 981
 tachycardia in digitalis intoxication 861
 electrocardiographic diagnosis 811
 paroxysmal 886
 quinidine in 802
 Ventriculus in pernicious anemia 1032
 Ventriculograms (Fig) 1409
 Ventriculography 14 9
 Veratrum 3506
 evaluation 3633
 Verberation, definition 1310
 Vernal conjunctivitis 1630
 (Fig) 1600
 grass geographic distribution (Fig) 560
 Veronal dosage (Table) 3836
 Verruca See also *Warts*
 diff diag (Table) 3212 3050
 necrogenica 3259
 vulgans of nails 3455
 Verrucous endocarditis 1019
 diff diag (Table) 1018
 Verruga peruana 384
 fly as vector in (Table) 42
 Vertebrae articular facets of fracture treat-
 ment (Table) 3004
 dislocations of pain in, diff diag (Table)
 2940
 lateral articular facets of dislocation 2970
 fracture 2970
 lumbar transverse processes of fracture
 treatment (Table) 3004
 sacralization 2819
 (Fig) 2800
 spinous processes of fracture treatment
 (Table) 3004
 subluxations pain in diff diag (Table) 2940
 transitional, 2819
 Vertebral column anatomy 2569
 (Fig) 3370
 Vertigo diff diag (Table) 2020
 in otosclerosis 2095
 Verumontanum anomalies 2426
 hypertrophy (Table) 2296
 infections 2409
 Vesical calculi 2314
 (Fig) 2318
 occurrence 2317
 removal 2321
 symptoms, 2318
 Vesicants gases as 745
 Vesicle definition 3101 8104
 diff diag (Table) 420
 oral diff diag (Table) 1668
 Vesico-ureteral backflow 2270
 Vesicular breathing 3539
 dermatoses diff diag (Table) 3334
 Vesiculectomy indications for 3994
 Vesiculitis seminal acute 2467
 chronic 2467
 Vestibular examination 2018
 neuritis 1486
 Vidian neuralgia 1483
 Vincent's angina quarantine data on (Table) 67
 infection 335
 arsenic preparations in 3118
 cutaneous manifestations (Table) 3046
 methods of diagnosis (Table) 3246
 sodium perborate in 3123
 organisms 335
 (Fig) 47
 Vioform in amebiasis 593
 evaluation, 3120
 Violet crystal preparation 49
 Viosterol dosage 621
 Virchow node in stomach carcinoma 1816
 Virilism 2418 2527 3440
 adrenal 1264
 causes 3440
 due to arrhenoblastoma of ovary 2573
 post pubertal 2270
 treatment 1271
 Virus amaril 477 See also *Yellow fever*
 Virus(es) in common cold 391
 cultivation technic 383
 diseases diagnosis 389
 encephalitis throat in diff diag (Table)
 3601
 (Fig) 383
 immunity reactions 389
 inclusion bodies 383
 infection, 387
 chills in (Table) 32
 cutaneous manifestations (Table) 3216
 dermotropic, 409
 diff diag (Table) 193
 fever in (Table) 26
 leukocytosis in diff diag (Table) 1027
 methods of diagnosis (Table) 3216
 neurotropic 439
 ocular manifestations 1605
 penicillin in evaluation, 111
 respiratory 391
 skeletal disorders in diff diag (Table)
 2935
 nature of 387
 pneumonia, 460
 pneumonitis 2188

- Watson-Jones reduction (Fig) 3010
 Waves of electrocardiogram 804
 Wax es pilating evaluation 3140
 Wax like facies diff diag (Table) 3309
 Wax ca ts 3632
 Way of life 3473
 Weak foot congenital, 3083
 Weaning 2751
 Wearing apparel dermatitis (Fig) 530
 Webbing of fingers 2825
 Weber syndrome 1427
 test, 1436 2017
 Weeds geographic distribution of (Fig) 560
 Weight disturbances of 634
 equivalents 3503
 gain in 3483
 in backward failure 943
 diff diag (Table) 695
 of infants (Table) 2727
 loss in Addison's disease 1273
 in carcinoma of pancreas 1943
 in diabetes mellitus 1248
 diff diag (Table) 700
 in hyperthyroidism 1203
 in infancy diff diag (Table) 2784
 in Simmonds disease 1171
 treatment, 629
 in tuberculous pneumonia. 2 01
 normal 3481
 deviations 3483
 reduction in backward failure 947
 in hypertension 012
 Weight height age tables for boys 3480 3481
 for girls 3482 3483
 for men 3483
 for women 3484
 Weil's disease See *Infectious jaundice*
 Weil Felix reaction 372
 in Rocky Mountain spotted fever 379
 Weir Mitchell disease See *Erythromelalgia*
 rest cure 3734
 in backward failure 946
 Wen, 3208
 Wenckebach phenomenon, 311 379
 (Fig) 850
 Werlhof's disease 1114
 Werner's syndrome 3238
 Wernicke's disease 1502
 Wertheim's panhysterectomy 2553
 Westergren method for blood sedimentation
 rate 3707
 Western encephalomyelitis in infants 432
 Wetherburn (Fig) 3236
 dressing 3134
 for eye application 1555
 W factor 631
 Wheel capillaries in, 785
 definition 3104
 diff diag (Table) 3346
 Wheat germ defatted in psoriasis dosage 3421
 Whey composition of (Table) 638
 Whipworm infestation, 1906
 Whirlpool bath (Table) 3791
 Whiskey in angina pectoris 893
 White blood cell disturbances 1096
 (Fig) 1037 1039
 normal, appearance 3699
 value (Table) 1045
 technic 3693
 reaction of skin, 785
 Whitfield's ointment 3307
 as fungicide 3114
 as keratolytic 3136
 prescription 3126
 Whooping cough 278 See also *Pertussis*
 cough plate in 281
 culture in (Table) 55
 epidemiology 41
 (Fig) 133
 quarantine date on (Table) 67
 vaccine administration (Table) 80
 diphtheria toxoid and combined evalua-
 tion 78
 tetanus toxoid combined evalua-
 tion 78
 Widal Abram's disease See *Jaundice hemolytic*
 Widal's hemoclastic crisis 1042
 test in typhoid fever 231
 technic 233
 Wilkinson's ointment prescription 3129
 Wilms tumor pathology 2327
 Wilson's disease 1977
 (Fig) 1417
 Wilson's disease dermatitis See *Dermatitis ex-
 foliativa*
 Winkel's disease 1076
 Windpipe, dissection (Fig) 5313
 tracheotomy (Fig) 3937
 Winter itch 3171
 Winthrope hematocrit tube (Fig) 3703
 Wisdom teeth (Fig) 1665 1681
 Witch's milk, 2778
 Wolhynian fever 393 See also *Trench fever*
 Women height weight age table for 3484
 Wood's light in diagnosis of trichocapitis
 3303
 Wool sorter's disease 202 2190
 diff diag (Table) 406
 Work hypertrophy 7
 Wound cleansing method (Fig) 3965
 closure 3928
 (Fig) 3929
 primary 3928
 secondary 3930
 types 3928
 complications 3936
 contaminated local care 3959
 incised treatment 3966
 infected treatment, 3961
 local 3959
 postoperative 4006
 lacerated treatment 3967
 (Fig) 3968
 oral 1689
 punctured, treatment, 3968
 rupture 4006
 treatment 4006
 suture techniques (Figs) 3930 3931 3932
 Wright's stain technic 3699
 Wrinkle-removers evaluation 3139
 Wrasberg's neuritis 1435
 Wrist dislocation 2976
 treatment (Table) 2971
 fractures 3028
 ganglion 2992
 nerve block at 3990
 Wryneck 2816
 Wucherera bancrofti, life cycle 3321
 (Fig) 3323
 infectious 3321

- Vitamin() therapy in lichen planus 3393
 in muscular dystrophy 884
 in portal cirrhosis 1971
 in psoriasis 3421
 in rheumatoid arthritis 2930
 in tuberculosis 269 271
- Vitiligo 3404
 diff diag (Table) 3404
- Vitreous anatomy 3618
- Vlemminkx's solution in acne vulgaris 3364
 bath 3134
 as keratolytic 3128
- Vocal cords examination 3607
- Voice sounds 3543
- Volatile oils uses 3131
- Vole vaccine 266
- Volkman contracture 3025
- Voluntary nervous system 1402 See also
Nervous system voluntary
- Volvulus 1875 (Fig) 1876
 in infancy diff diag (Table) 2730
- Vomiting alkalosis in diff diag (Table) 722
 in azotemia 2278
 of blood See *Hematemesis*
 in brain tumors 1421
 definition 1772
 diff diag (Table) 1770
 from digitalis 857
 in infancy diff diag (Table) 2734
 medications for 1758
 in pertussis 279
 postoperative 4008
 in pregnancy 2620
 pernicious 2637
- Von Economo's disease 441
- Von Gierke's disease 1978
 acidosis in diff diag (Table) 721
 blood fat in diff diag (Table) 738
 circulatory disturbance in (Table) 955
 diff diag (Table) 868
 hypoglycemia in diff diag (Table) 734
- Von Graefe's sign in hyperthyroidism 1903
- Von Jaksch's anemia 1073
- Von Recklinghausen's disease 1615 3206
 (Fig) 1414 3201
- Voyeurism definition 1304
- Vulpian reaction 3878
- Vulva bacteria in 150
 carcinoma 2549
 chancre of (Fig) 836
 chancroid 2588
 condylomata acuminata 2595
 disturbances diff diag (Table) 2548
 elephantiasis 2597
 furunculosis 2595
 gumma of (Fig) 838
 herpes simplex 2592
 herpes zoster 2592
 inflammation 2588
 intertrigo 2595
 kraurosis 2597
 leukoplakia 2597
 lichen planus 2594
 lymphopathia venereum of 2591
 melanoma, 2549
 mycosis 2593
 postpartum care of 2718
 pruritus diff diag (Table) 2594
 psoriasis 2594
 scabies 2594
- Vulva seborrhea 2595
 senile atrophy of 2595
 syphilis 2589
- Vulvitis acute nonspecific 2586
 mycotic 2593
 (Fig) 2592
 tuberculous 2588
- Vulvovaginal carcinoma 2549
 cysts 2547
- Vulvovaginitis diff diag (Table) 3215 3250
 gonorrheal 2586
 diagnosis 2587
 treatment 2588
 estrone suppositories in 3119
 senile diff diag (Table) 3219 3275
 (Fig) 2597
 trichomonal (Fig) 2596
- WADDLE in infancy causes (Table) 2737
- Waiting room equipment 4042
- Walking delayed causes of (Table) 2756
 iron with plaster casts 2997
 tall exercises 3759
- Walton manipulation (Fig) 3006
- Wandering cells 3
 pacemaker 877
 electrocardiographic diagnosis 810
- War gases 745
- Warts 3288
 chromium trioxide in 3138
 common 3289
 diff diag (Table) 3212
 of eyelids trichloroacetic acid for 3138
 juvenile 3291
 plantar 3090
 senile 3217
 treatment 3291
 trichloroacetic acid in 3131
 venereal, 3291
- Washes aqueous 3135
 hydro-alcoholic 3135
- Wasp bites 3197
- Wassermann reaction 337
 interpretation, 337
 therapeutic test 339
- Water administration dangers of 587
 in American diet 633
 body distribution 536
 brash definition 1771
 heavy 587
 hemp geographic distribution (Fig) 560
 intake in infectious disease 71
 interchange 536
 intoxication 11 536 705
 causes 12
 definition 11
 intracellular constituents 536
 loss skin function in 3100
 metabolism 535
 sodium and 597
 parenteral administration, 597
 percentage in vegetables (Table) 645
 polluted in typhoid epidemic 227
 restriction in obesity 637
 in serum (Table) 6
 therapeutics 3823
- Water hammer pulse diff diag (Table) 853
- Waterhouse-Friderichsen syndrome 211
- Watermelon seed effect on muscle 8883

INDEX OF ILLUSTRATIONS

NOTE: Bold face page numbers indicate colored illustration.

- ABDOMINAL CAVITY** 3559
 muscles, 3553
- ABRUPTIO PLACENTAE** 2006 2007
- ABSCESS OF BREAST**, 3378
 endobronchial 2074
 ischio-rectal, 2060
 liver 216
 perianal 3380
 pericoronar, 1696
 perinephric 2360
 subungual, treatment of 3972
- ACANTHOSIS NIGRICA**, 3356
- ACCOMMODATION**, 15 6
- ACETONE IN URINE** 3678
- ACHALASIA**, x-ray 1725
- ACID, TOTAL IN GASTRIC CONTENT**, 3724
- ACIDOSIS**, urine test for 3678
- ACNE**, pustular 3309
 rosacea, 3309
 vulgaris 3309
- ACRODYNIA** 3148
- ACROMEGALY** 1157
- ACTINOMYCETOSIS**, 4 6
 of face 3310
 of lung 491
- ADAMANTINOMA**, x ray 1715
- ADDISON'S DISEASE** oral signs 1674
 pigmentation in, 1704 1674
- ADENOCARCINOMA OF STOMACH**, x ray 1815
 of uterus, 2562
- ADENOFIBROMA OF BREAST**, 576
- ADENOMA OF COLON**, 1867
 pituitary visual fields in 1158 1159
 sebaceous, 3149
 in tuberosus sclerosis 1414
 sella turcica in, x ray 1177
- ADHESIVE STRAPPING APPLICATION**, diagram 3069
- ADIPOS DOLOR**, 1175
- ADIPOSOGENITAL DYSTROPHY** 1168
- ADRENAL CORTICAL DEFICIENCY** oral signs 1674
- ADRENERGIC NERVOUS SYSTEM** in 3373
- AEROSOL APPARATUS** 2041
- AGGLUTINATION OF RED CELLS IN TRANSFUSION** 3711
- AMNIUM** 3370
- AIRPLANE SPLINT**, 3019
- ALEPPO BUTTON**, 3319
- ALLERGY** intradermal test for 55a 558
 ophthalmic test for 504
 of skin, 3331 3814
 skin test for 508
- ALOPECIA AREATA** 3441
 syphilitica, 3441
- AMARANTH PALMERI**, geographic distribution of 569
- AMAUROTIC FAMILY DYSTROPHY** eye in, 1413
- AMEBIC IN STOOL**, 3731
- AMEBIASIS** stool in, 527
- AMERICAN LEISHMANIASIS**, 3317
- AMPUTATION OF FOREARM**, 3954
 leg 3955
- AMYLOID IN GLOMERULUS** 8
- AMYLOIDOSIS**, 8
- AMYOTONIA CONGENITA** 2585
- ANAL CANAL ANATOMY OF** 3564
 fistula, 3990
 swab in worm infestation, 1903
- ANALGESIA**. See *Anesthesia*
- ANALYZER FOR OXYGEN** 3930
- ANEMIA**, familial hemolytic c., 1062
 pernicious 1079
 retina in, 1589
 sickle cell in 03
- ANESTHESIA, CAUDAL**, 3921
 in obstetrics 2080
 conduction block, 3918
 field block, 3918
 finger block, 3919
 infiltration, in Pott's fracture 2990
 local 3918 3919 3921
 for rectum 3929
 nerve block, 3918
 paravertebral block, 3918
 rectal, 3929
 spinal, 3918
 ulnar block, 3918
- ANEURYSM, CARDIAC** contour in, 737
- ANGINA PECTORIS** electrocardiogram 817 818
 843
 aortic, 177
- ANGIOMAS**, 3700
- ANKLE, FRACTURES**, 3043 3049
 immobilization in, 3050
 reduction in 30 1
 walking plaster in, 30 1
- TUBERCULOSIS**, 2945
 valgus 2830
- ANKYLOSIS OF TEMPOROMANDIBULAR JOINT** 1688
- ANTI-PITUITARY DEFICIENCY IN CHILDHOOD**, 1163
- RHINOSCOPY** 3592
- ANTHRAX**, malignant pustule, 3273
- ANUS** anatomy of 3564
 chancre of 330
 lesion of in granuloma inguinale, 476
 local anesthesia for 39 9
 proctitis of 3417
- AORTA, ANEURYSM OF** 798
 constriction of 960
 insufficiency phonocardiograms 3050
- ARCH SUPPORT**, 3040
- ARROS SENILIS**, 1593
- ARGASIDAE**, 3192
- ARBORESCENCE**, 3237
- ARM, AMPUTATION OF** 3924
 anatomy of 3573
- ARNETH COUNT**, 2703
- ARTHROBLASTOMA OF OVARY** 2574

- XANTHELASMA palpebrarum** 3243 (Fig) 1567 Yaws diagnosis 332
 removal, 3138
 (Table) 1566
 treatment technic 3243
 trichloroacetic acid in, 3130
Xantheloma of eyelids (Fig) 3241
Xanthines as diuretics dosage 2260
 effect on heart muscle 3383
 in peripheral vascular disease, 308
 pharmacology 3866
 preparations, 3866
 (Table) 3866
 therapeutics 3866
Xanthochromia 1445 3734
 of spinal fluid 1430
Xanthoma(s) diff diag (Table) 3212 3298
 3360 3369 3380
 disseminatum 3244
 pigmentation in diff diag (Table) 3197
 tuberosum et planum 3243
 of hands (Figs) 3241
Xanthomatosis 1135
 blood cholesterol in diff diag (Table) 786
 diff diag (Table) 28-9
Xenopsylla cheopis as vector (Table) 42
Xeroderma pigmentosum 3158 3176
 diff diag (Table) 413 3157 3208 3380
 in infancy diff diag (Table) 3147
 ophthalmic manifestations 1587
 rash in diff diag (Table) 3283
Xeroform in skin disturbances 3116
Xerophthalmia 619
Xerosis of conjunctiva (Table) 1501
 diff diag (Table) 175
X ray See *Röntgen*
 room 3743
Xylene in lice infestation prescription 3131

YARDERICK of nutrition (Table) 659
Yatren 630
Yaws 351
 conjunctivitis 1622
 by smear (Table) 50
 diff diag (Table) 175 412
 epidermology 352
 mite as vector in (Table) 42
 ocular manifestations 1605
 secondary eruption in (Fig) 352
 serologic test in (Table) 61
 treatment, 353
Yellow fever 477
 diff diag (Table) 23
 focal nephritis in 2386
 immune serum evaluation 82
 immunity after 76
 mosquito as vector in (Table) 42
 neutralization test in 81
 prevention, 479
 serologic test in (Table) 61
 vaccine 480
 evaluation 79
 oxide of mercury as antiseptic 3121
Young Helmholtz theory 1532

ZENZKER diverticula 1730
 (Fig) 1731
Ziegler cautery operation 1549
Ziehl Neelsen stain technic 52
Zinc acetate in skin diseases 3132
 gelatus paste boot after plaster removal
 3001
 oxide in skin diseases 3132
 paste prescription 3132
 peroxide paste prescription 3132
 poisoning clinical manifestations (Table)
 761
 (Table) 761
 diff diag (Table) 240
 occupations susceptible to (Table) 761
 treatment (Table) 761
 sulfate in conjunctivitis 3132
Zoster See *Herpes zoster*
Zygospore definition 485

INDEX OF ILLUSTRATIONS

NOTE Bold face page numbers indicate colored illustration

- ABDOMINAL cavity** 3559
 muscles, 3553
Abruptio placentae 2666 2667
Abscess of breast, 2978
 end bronchial 2074
 ischio-rectal 3080
 liver 696
 perianal 3980
 pericoronar 1696
 perinephric 2360
 subungual treatment of 3972
Acanthosis nigricans 3366
Accommodation 1516
Acetone in urine 3678
Ichthala. u., x ray 1725
Acid total, in gastric content, 3724
Acidosis urine test for 3678
Aena, pustular 3359
 rosacea, 3359
 vulgaris 3359
Acrodynia 3148
Acromegaly 1187
Actinomycetosis, 486
 of face 3310
 of lung 491
Adamantinoma, x ray 1715
Addison's disease oral signs 1674
 pigmentation in 1274 1674
Adenocarcinoma of stomach, x ray 1815
 of uterus 2562
Adenofibroma of breast, 576
Adenoma of colon, 1867
 pituitary visual fields in 1158 1159
 sebaceous, 3149
 in tuberous sclerosis 1414
 sella turcica in, x ray 1177
Adhesive strapping application, diagram 3069
Ad po is doloosa 1175
Adiposogenital dystrophy 1168
Adrenal cortical deficiency oral signs 1674
Adrenergic nervous system 3873
Aerosol apparatus 4041
Agglutination of red cells in transfusion 3711
Ailanthum 3370
Airplane splint, 3019
Aleppo button 3319
Allergy intradermal test for 550 558
 ophthalmic test for 554
 of skin, 3331 3814
 skin test for 558
Alopecia areata 3441
 syphilitica 3441
Amaranth Palmeri, geographic distribution of 500
Amniotic family atrophy eye in, 1413
Amebae in stool, 3731
Amebiasis stool in, 57
American leishmaniasis 3317
Amputation of forearm, 3954
 leg 3955
Amyloid in glomerulus 8
Amyloidosis, 11
Amyotonia congenita 2885
Anal canal anatomy of 3364
 fistula, 3930
 swab in worm infestation, 1903
Analgesia See *Anesthesia*
Analyzer for oxygen 3280
Anemia, familial hemolytic, 1062
 pernicious 1079
 retina in, 1589
 sickle cell 3705
Anesthesia, caudal, 3971
 in obstetrics 2659
 conduction block 3918
 field block 3918
 finger block 3919
 infiltration, in Pott's fracture 2900
 local 3918 3919 3921
 for rectum 3979
 nerve block, 3918
 paravertebral block, 3918
 rectal, 3979
 spinal, 3918
 ulnar block 3918
Aneurysm cardiac contour in, 797
Angina pectoris electrocardiogram 817 818
 845
 scapular 177
Angiomas, 3209
Ankle fractures, 3048 3049
 immobilization in, 30 0
 reduction in 30 0
 walking plaster in, 30 1
 tuberculosis, 2945
 valgus 2830
Ankylosis of temporomandibular joint, 1688
Anterior pituitary deficiency in childhood, 1168
 rhinoscopy 3539
Anthrax, malignant pustule 3273
Anus anatomy of 3 81
 chore of 335
 lesion of in granuloma inguinale 476
 local anesthesia for 3979
 proctitis of 3417
Arteria, aneurysm of 738
 coarctation of 960
 insufficiency pharyngeal 3550
Arch support, 3080
Arcus senilis, 1593
Argasid e 3199
Arborescence 3237
Arm amputation of 3954
 anatomy of 3573
Arrest count 3703
Arthroblastoma of ovary 2574

- Arsenic dermatitis from 3331 3815
 Arterial bed pulse tracing 783
 Arteriosclerosis eye in 907
 kidney in 902 903
 Artery cerebral 1440
 dissection, 3510 3519 3545
 retina, obstruction of 1588
 Arthritis infectious 2907
 rheumatoid stages 2912
 x ray 2914
 Arthrogryposis multiplex congenita 2823 2833
 Artificial reparation 3767
 Ascaris lumbricoides 1906
 ova 1894
 Aschoff body in heart 188
 Ascorbic acid deficiency 3239
 Aspergillosis of lung x ray 2215
 Aspiration of knee 3949
 Asthenia neurocirculatory electrocardiogram 808 813
 Asthma bronchial cardiac contour in 704
 electrocardiogram 823
 Atavia Friedrich's 1416
 Atelectasis postoperative x ray 2051 4017
 Atopic dermatitis 3331 3314
 neurodermatitis 3331 3314
 Atrophy brown of heart, 8
 optic 1413 1422
 Atropine dermatitis 1665
 Auditory canal anatomy of 3610
 Auricular flutter electrocardiogram 842
 paroxysmal electrocardiogram 841
 Auriculoventricular dissociation electrocardiogram 850
 Autonomic nervous system 2873
 Avitaminoses 3246 3237
 Avulsion of wound 8967
 Axilla acanthosis nigricans of 3356
 Fox Fordyce disease of 3465
 sweat gland abscess of 3247
 Back broken transportation in 2969
 sprain manipulation in 3064-3068
 syphilis of 338
 Balantidium coli 1892
 Baldness 3441
 Bandage 2999
 four tailed for fractured jaw 2966
 Bartonella bacilliformis in blood smear 345
 Basal cell epithelioma 3220
 Bazin's disease 3263
 Beard ringworm of 3303
 Bedbug 3184
 Benedict test for sugar in urine 3675
 Bernieri wet 618
 Bermuda grass geographic distribution 560
 Bestner's disease 3263
 Bile ducts cirrhosis of 1994
 cyst of 1994
 Bilharziasis vesical 2342
 Binocular magnifier 1554 3623
 Birdlike facies 1688
 Birth palsies 2959
 Bismuth deposit in gingivae 1675
 Bladder 2397
 carcinoma cystoscopic view 2324
 cystostomy and cystotomy 3956
 innervation 2233
 mucosa normal 2324
 Bladder papilloma cystoscopic view 2324
 tabetic cystogram 2332
 tuberculosis cystoscopic view 2324
 tumor of 371
 Blastomycosis 486
 of leg 3311
 of lung x ray 2211
 of spine 494
 BIR mask 3878
 Blepharitis chronic 1610
 Blood Arneth count 3703
 cells red 3700
 agglutination of 3711
 in sickle cell anemia 3704 3705
 white 3701 3702 3703
 colorimeter 3714
 compatible for transfusion 3711
 counting chamber 3696
 filament count 3703
 fuke eggs in stool 3781
 hematocrit tube 3708
 hemoglobinometer 3694
 hemometer 3694
 incompatible for transfusion 3711
 matching tests for transfusion 3711
 pressure determination technic 789
 reticulated red cells in 3705
 Schilling count 3703
 in sickle cell anemia 3704 3705
 sugar curves 3716
 after insulin 1239
 tubes 3715
 vessels anatomy of 3577
 Blue grass geographic distribution 560
 Boas Oppler bacilli in stomach contents 3723
 Body macular syphilis of 338
 ringworm of 3294
 syphilis of 3280
 Boeck's sarcoid 3263
 Boil 3247
 Bone cyst 2853
 formation in infancy 2797
 fragility 2877
 marble 2880
 Borrelia recurrentis 358
 refringens 46
 Bothrocephalus ova in stool 3791
 Bowler's torsion x ray 878
 Bowen's disease 3221
 Bowlegs 2852
 Boxer's braces in back sprain 3070
 Brachial plexus anatomy of 3582
 Brain damage electroencephalograms in 1447
 frontal section, 2023
 tumor electrocardiogram 837
 x ray 1441 1423 1424 1445
 Breast abscess treatment 3978
 adenofibroma of 576
 carcinoma 2381
 electrocardiogram 829
 dissection 3534
 psoriasis of 3417
 radiodermatitis of 3796
 traumatic fat necrosis 2516
 Brenner tumor of ovary 2570
 Bronchi anatomy of 3531
 tumors 2076
 Bronchial asthma electrocardiogram 825
 cardiac contour in 704
 Bronchiectasis electrocardiogram, 822

- Bronchiectasis hypocrastic fingers in 2063
 x rays 2060 2196
 Bronchitis chronic electrocardiogram 838
 Bronchopneumonia, x ray before and after
 treatment 2191
 Bronchoscope 2026
 Bronchoscopic views of bronchial carcinoma
 2076
 Brown atrophy of heart 8
 Brown Buerger cystoscope 2248
 Brucellergin skin reaction 318
 Brucellosis test for 318
 Bubo chancroidal 2582 2591
 of lymphopathia venereum 3277
 Buffalo obesity 1161
 Bunion 2080
 Burns lye of esophagus x ray 1735
 Bursitis needle puncture in 2901
 olecranon 2902
 prepatellar 2903
 subacromial showing needle puncture for
 decompressing 2901
 subdeltoid calcified 2904
 CACHEXIA hypophyseal 1171
 Calculi biliary 1998 1999
 dental 1699
 of prostate gland x ray 2437
 renal x ray 2517
 in salivary glands x ray 1711
 urinary 2312 2313
 vesical radiopacity of 2315
 x ray 2318
 Capillary hemorrhages due to vitamin C de-
 ficiency 3239
 lake 781
 nevus 3200
 Carbon dioxide inhalators for 3831
 and oxygen inhalator for 3831
 Carbuncle 3247
 treatment of 3971
 Carcinoma of bladder cystoscopy 2324
 of breast 2581
 electrocardiogram 829
 of bronchi, bronchoscopic view 2076
 of cervix epidermoid 2552
 of colon x ray 1889
 epidermoid 1719
 of esophagus x ray 1739
 of eyelid border 1667
 of larynx 2073
 of lung x ray 2079
 metastatic pathologic fracture through 2818
 of nasopharynx irradiation 2069
 of ovary 2671
 of rectum x ray 1917
 of sigmoid x ray 1699
 of skin, 32.0 32.1
 of stomach Boas-Oppler bacilli in gastric
 content 3723
 Cardiac contour normal 79 793 794
 murmurs phonocardiograms of 3549 3550
 Cardiospasm x ray 1725
 Carditis rheumatic electrocardiogram 5 0
 833 850
 Carpal bones fractures gauntlet in 3033
 Carpus tuberculo 2946
 Cartilage semilunar fracture types 2961
 Cascade stomach x ray 1805
 Cataract senile, 1593
 Catarrhal conjunctivitis, 1617
 Cathartic dermatitis from 3331 3315
 Catheter method of retaining 2210
 tracheal 2769
 types 2233 2239
 urethral method of retaining 2210
 woven 2239
 Catheterization of male steps in 2235 2236
 2237 2238
 Caudal analgeia, 3921
 in obstetrics 2682
 action on nerve trunks 2687
 insertion of needle in 2680
 Cavernous angioma, 3200
 Cephalhematoma double 2772
 Cerebral arteries 1440
 Cerebrospinal fluid, colloidal gold test 3737
 Cervical plexus anatomy of 3582
 rib 2819
 spine dislocation traction in 3007
 fracture cast in 3008
 fracture-dislocation of cast in 3008
 Cervicovaginitis 2096
 trichomonal 2096
 Cervix uteri carcinoma, 2552
 chancere of 2 90
 erosion 2034
 nabothian cysts of 2050
 polyps 2500
 Chalazion removal technique 1611
 Chancere of anus 3279
 of cervix uteri, 2590
 of face 3279
 of lip 3279
 of penis 3279
 of vulva 3279
 Chancroid 3275
 of penis 3275
 skin test of 3275
 Chancroidal bubo 2559
 Charcot's joint 2932
 Cheilitis due to riboflavin deficiency 3237
 Cheloid 3160
 Chest barrel-shaped in pulmonary emphyse-
 ma 2037
 seborrheal dermatitis 3420
 Chigger 3190
 Chlambion 3160
 Cholecystitis chronic catarrhal 2003
 Cholecystography 1988 1989
 Choledochus cyst 1964
 Cholelithiasis 1998
 x ray 1999
 Chondrosarcoma 2146
 Cholinergic nervous system 3873
 Chondrodysplasia x ray 2838
 Chondroma 2838
 Chorea electrocardiogram 839
 Chorionepithelioma of uterus 26 6
 Choroideremia acute 1634
 Choroid tubercular tuberculosis of 1464
 Chromoblastomycosis of leg 3315
 Cimex 3184
 Circulation capillary lake of 781
 Circumcision 3936
 Cirrhosis biliary 1974
 of liver 9
 Costal puncture 3283
 Clavicles fracture x ray 3107
 sphincter in 2914

- Clawfoot 3087
 Cleft lip 1684
 Cleidocranial dysostosis 2824
 Clubhand 2828
 Coccidioidomycosis 486 3313
 of lung x ray 2212
 Colitis ulcerative diffuse x ray 1858
 Colles fracture 3028 3029
 flexion in 3030 3032
 traction in 3031
 ulnar deviation 3032
 Collins hitch 2993
 Colloidal gold test of spinal fluid 3737
 Coloboma congenital of eyelid 1561
 of macula, 1563
 Colon adenoma of 1867
 carcinoma of x ray 1889 1890
 in constipation x ray 1848
 diverticula x ray 1869
 polypoid 1867
 x ray 1854
 Coloptosis 3489 3490 3491
 Color fields 1542
 Colorimeter 3714
 Dunning 2242
 for phenolsulfonphthalein test, 3689
 Coma diabetic electrocardiogram 833
 Conduction block anesthesia 3918
 of heart 774
 Congestive heart failure electrocardiogram 823
 Conjunctiva pemphigus of 1565
 Conjunctivitis catarrhal, 1517
 gonorrheal 1617
 hay fever 1650
 vernal 1650
 Constipation rectal x ray 1850
 x ray 1849
 Contact dermatitis from refrigerating gas 3332
 3815
 from tar 3331 3815
 Contactual atopy 3331 3814
 dermatitis 3331 3814
 Convulsion treatment set 3793
 Cor pulmonale electrocardiogram 822
 Coronary artery disease with bronchitis
 electrocardiogram 838
 electrocardiogram 818 826 829 830
 831 832 837 838 844 847 848 849
 850
 occlusion electrocardiogram in 4029
 insufficiency electrocardiogram 817
 vessels anatomy of 3545
 Corynebacterium diphtheriae 47
 Cosmetic dermatitis 3332 3815
 Cough plate in pertussis 281
 Counting chamber 3696 3697
 Cova plana x ray 2928
 vara 2925
 Craniopharyngioma effect on growth 1176
 Cranium bifidum 1408
 Creeping eruption 3193
 Cretinism 1192
 Crush fractures treatment, 3010 3011
 Watson-Jones reduction in 3010
 Cryptococcosis of lungs 497
 Cryptorchidism diagram 2425
 Ctenocephalides felis 3188
 Cushing's disease 1161
 Cutis hyperelastica 3150
 verruca gyrata 3159
 Cyst of mandible 1713
 of oropharynx 1713
 pilomidal 3945
 Cystadenoma of ovary 2568
 Cystitis cystica 2344
 Cystocele 2536
 Cystograms of bladder 2332
 normal 2247
 Cystoscope Brown Bueger 2248
 Cystoscopic views of bladder 2324
 Cystostomy suprapubic 3956
 DARIER'S disease 3159
 Débridement of wound 3960 3961 3962
 Decompression of intestines 4011
 of subungual hematoma, 3964
 Degeneration fatty 8
 parenchymatous 8
 DeLee's forceps delivery 2698 2699
 operation telescope 2677
 portable sterilizer 2677
 Delivery 2700-2710
 forceps 2698 2699
 Dental calculus 1699
 x rays 1657 1658 1659 1702
 Dercum's disease, 1175
 Dermacentor andersoni Stiles 3192
 Dermal creeping myiasis 3193
 Dermatitis allergic 3331 3814
 arsenic 3331 3815
 artefacta 3230
 atopic 3331 3814
 atropine 1565
 cathartic 3331 3815
 clothing 650
 contactual 3331 3814
 from refrigerating gas 3332, 3815
 from tar 3331 3815
 cosmetic 550
 diaper 3160
 drug 550
 exfoliativa 3385
 faciata, 3232
 hair dye 3814
 hatband 3331 3814
 herpetiformis of pregnancy 3241
 lipstick 3331 3814
 luminal 3332 3815
 medicamentosa 3331 3814
 napkin 3160
 pellagrous due to niacin deficiency 3237
 phenobarbital 3332 3815
 phenolphthalein, 3332, 3815
 radium 3796
 schistosoma 3196
 sulfathiazole 3331 3814
 Dermatomyomys 3973
 Dermatophytid 3293
 Dermoid cyst of mediastinum 2082
 Dhobie itch 3295
 Diabetes mellitus necrobiosis lipodica of 3241
 retina in 1598
 Diabetic coma electrocardiogram 833
 Diacetic acid in urine 3678
 Diamanus montanus 3188
 Diaper dermatitis 3160
 Diathermy 3788
 Dick test negative 58
 positive 58

- Digestive organs, anatomy of 3561
 Digitalis poisoning electrocardiogram 847 848
 Dilantin gingivitis 384a
 Dimethylamino-azobenzol for titration of gastric acidity 372d
 Diphtheria, tonsillar 303
 vulvular 303
 Diphylobothrium latum 189d
 ova in stool 373i
 D plegia, spastic, 2940
 Dislocation of elbow 2975
 of knee 2980
 of shoulder 2972
 reduction, 2973
 Diverticulosis x ray 1869
 Diverticulum Meckels x ray 1865
 traction 173d
 Zenker x ray 173i
 Donovan bodies in granuloma inguinale 475
 Dracunculus medinensis, 3327
 Dressing room 404i
 Drop intravenous, 3775
 Drug allergy 3332, 3315
 atopy 3332, 3315
 dermatitis 330
 Duboscq colorimeter 371d
 Ductus arteriosus patent, 338
 Dunning colorimeter 2242
 Duodenal ulcer electrocardiogram 836
 perforation, x ray 1790
 x ray 1736
 Duodenum anatomy of 3559
 hernia of x ray 180d
 Dupuytren contracture 2897
 Dysgerminoma of ovary 2572
 Dy keratosis follicularis (Darier) 3159
 D trophy of nails 3462
- Fan, anatomy of 3610
 canal atresia, before and after operation 204d
 drum 214
 Echinococcus cysts in liver 1901
 Ectropion senile 1570
 Eczema, 3331 381d
 Edema, electrocardiogram, 83d
 of legs due to vitamin B deficiency 3236
 in vitamin B deficiency 618
 Effusion pleural 256
 Eggs in stool 373i
 Elbow dislocation before and after reduction, 975
 red clot in 2075
 fracture protection in, 2998 2999
 splint 299d 299i
 Electrocardiograms 3545
 in acute coronary closure 4023
 glomerulonephritis 7 83
 pericarditis 819
 rheumatic carditis, 833
 in angina pectoris 817 818 843
 after arsenical hepatitis 827
 in auricular fibrillation 84 843 845
 flutter 841 842
 in auriculoventricular dissociation 830
 in brain tumor 837
 in breast carcinoma, 829
 in bronchial asthma, 825
 in bronchiectasis 827
 Electrocardiograms in chorea, 839
 in chronic bronchitis 839
 in congestive heart failure 823
 in coronary artery disease 818 826 829 830
 831 832 837 838 844 847 848 849
 850
 insufficiency 817
 in diabetic coma, 833
 in digitalis poisoning 847 848
 in duodenal ulcer 836
 in edema, 83d
 in essential hypertension, 817 820 821 830
 841
 in gastro-intestinal hemorrhage, 817
 in hypertension, 4023
 in hyperthyroidism 823
 in intra auricular septal defect, 823
 inverted T₁ and T₂ wave 835
 in malignant hypertension 821 822
 in mesenteric embolism 842
 in mitral stenosis 801 824 826 849 843 9 8
 in myocardial infarction 814, 815 816
 in myocarditis with trichinosis 83d
 in neurocirculatory asthenia 803 813
 normal 800 803 811
 in obesity 808 812 813
 in periarthritis 836
 in pericardial effusion 83d
 in precordial pain, 81d 815
 in pulmonary edema, 819
 embolism 819
 in pyloric obstruction, 835
 in rheumatic carditis 820 833 830
 valvular defect, 837 842 843 845 816
 in status asthmaticus 823
 in supraventricular tachycardia, 840 849
 in thrombo-angitis obliterans 4023
 time relation in 775
 in tricuspid disease, 82d
 in trigeminal rhythm 83d
 in uterine bleeding 817
 Electro-encephalograms patterns 1403
 Electro-encephalographic focus types 1427
 Electrophonocardiograms 3549
 Electroshock unit 3793
 Elephantiasis of penis 3277
 Embolism mesenteric electrocardiogram 842
 pulmonary electrocardiogram 819
 Empyema, cardiac contour in, 79d
 pulmonary 2057
 Endamoeba histolytica in stool 227 2731
 Endarteritis obliterating 1029
 Endobronchial abscess, 207d
 pathology 207d
 Endocarditis bacterial subacute 1022
 Janeway lesion in, 1023
 rheumatic, 1016
 Endocervicitis 2550 2596
 Endometriosis, 25a9
 vaginal, 2560
 Endometritis tuberculous 2610
 Enterobius ova in stool, 373i
 vermicularis 189d
 Enteroptosis, 3489 3490 3491
 Entrombecula alfreddugesi, 3190
 Eosinophilic granuloma, 2842
 Epicanthus 1561
 Epidermis anatomy of 3499
 Epidermolysis bullosa, 3159

- Clawfoot 3087
 Cleft lip 1684
 Cleidocranial dysostosis 2824
 Clubhand 2823
 Coccidioidomycosis 486 3313
 of lung x ray 2212
 Colitis ulcerative diffuse x ray 1858
 Colles fracture 3028 3029
 flexion in 3030 3032
 traction in 3031
 ulnar deviation 3032
 Collins hitch 2993
 Colloidal gold test of spinal fluid 3737
 Coloboma congenital of eyebd 1561
 of macula 1563
 Colon adenoma of 1867
 carcinoma of x ray 1889 1890
 in constipation x ray 1848
 diverticula x ray 1869
 polyposis 1867
 x ray 1854
 Coloptosis 3489 3490 3491
 Color fields 1542
 Colorimeter 3714
 Dunning 2242
 for phenolsulfonphthalein test 3689
 Coma diabetic electrocardiogram 833
 Conduction block anesthesia 3918
 of heart 774
 Congestive heart failure electrocardiogram 893
 Conjunctiva pemphigus of 1865
 Conjunctivitis catarrhal, 1617
 gonorrheal 1617
 hay fever 1650
 vernal 1650
 Constipation rectal x ray 1850
 x ray 1849
 Contact dermatitis from refrigerating gas 3332
 3815
 from tar 3331 3815
 Contactual atopy 3331 3814
 dermatitis 3331 3814
 Convulsion treatment set 3793
 Cor pulmonale electrocardiogram 822
 Coronary artery disease with bronchitis
 electrocardiogram 838
 electrocardiogram 818 826 829 830
 831 832 837 838 844 847 848 849
 850
 occlusion electrocardiogram in 4029
 insufficiency electrocardiogram 817
 vessels anatomy of 5545
 Corynebacterium diphtheriae 47
 Cosmetic dermatitis 3332 3815
 Cough plate in pertussis 281
 Counting chamber 3696 3697
 Coxa plana x ray 2923
 vara, 2895
 Craniopharyngioma effect on growth 1176
 Cranium bifidum 1408
 Creeping eruption 3193
 Cretinism 1102
 Crush fractures treatment, 3010 3011
 Watson-Jones reduction in 3010
 Cryptococcosis of lungs 497
 Cryptorchidism diagram 2425
 Ctenocephalides felis 3188
 Cushing's disease 1161
 Cutis hyperelastica 3150
 verticis gyrata 3159
 Cyst of mandible 1713
 of oropharynx 1713
 piloid, 3045
 Cystadenoma of ovary 2568
 Cystitis cystica 2344
 Cystocele 2536
 Cystograms of bladder 2332
 normal 2247
 Cystoscope Brown Buerger 2248
 Cystoscopic views of bladder 2324
 Cystostomy suprapubic 2956

 DARIER's disease 3159
 Débridement of wound, 3960 3961 3962
 Decompression of intestines 4011
 of subungual hematoma, 3964
 Degeneration fatty 8
 parenchymatous 8
 DeLee's forceps delivery 2698 2699
 operation telescope 2677
 portable sterilizer 2677
 Delivery 2700-2719
 forceps 2698 2699
 Dental calculus 1699
 x rays 1657 1658 1659 1702
 Dercum's disease, 1175
 Dermacentor andersoni Stiles 3192
 Dermal creeping myiasis 3193
 Dermatitis allergic 3331 3814
 arsenic 3331 3815
 artefacts 3232
 atopic, 3331 3814
 atropine 1565
 cathartic 3331 3815
 clothing 550
 contactual 3331 3814
 from refrigerating gas 3332, 3815
 from tar 3331 3815
 cosmetic 550
 diaper 3160
 drug 550
 exfoliative, 3335
 factitia, 3232
 hair dye 3814
 hatband 3331 3814
 herpetiformis of pregnancy 3241
 hpstick 3331 3814
 luminal 3332 3815
 medicamentosa, 3331 3814
 napkin 3160
 pellagrous due to niacin deficiency 3237
 phenobarbital 3332 3815
 phenolphthalein, 3332, 3815
 radium 3796
 schistosome 3196
 sulfathiazole 3331 3814
 Dermatomyositis 3373
 Dermatophytid 3294
 Dermoid cyst of mediastinum 2082
 Diobeco itch 3295
 Diabetes mellitus necrobiosis lipoidica of 3341
 retina in 1598
 Diabetic coma electrocardiogram 833
 Diacetic acid in urine 3678
 Diarrhoea montana 3188
 Diaper dermatitis 3160
 Disthermy 3788
 Dick test negative 58
 positive 58

- Flatfoot 3077 3078
 Fleas 3188
 Floke eggs in stool 3731
 Flutter auricular electrocardiogram 811 812
 Focal illumination 3022
 Follicular hyperkeratosis due to vitamin A deficiency 3236
 Foot deformities 2930
 gangrene of 3090
 maduromycosis of 3311
 normal, 3077
 ringworm 3201
 straps strapping in 3079
 Foot-and mouth disease oral sign 1672
 Forceps delivery 2698 2699
 Simpson's 2695
 Fordyce disease 1634
 Forearm amputation of 3034
 fracture protection in 2993 2999
 lichen planus of 3397
 Foreign bodies in stomach x ray 1807
 swallowed by patients 3085
 Fox Fordyce disease 3163
 Fractures of ankle 3043 3049
 immobilization in 3050
 reduction in, 3050
 walking plaster in 3051
 of clavicle splintage in, 3074
 Colles 3028 3029 3030 3031 3032
 crush treatment, 3010 3011
 Watson-Jones reduction in 3010
 of elbow protection in 3008 3090
 of forearm protection in 2999 2990
 healing x rays 2937
 of humerus hanging cast in 3000
 of internal semilunar cartilage 2961
 of metacarpals 3036
 of nose 3013
 of radius, 3026
 of ulna 3026
 Frei test 3277
 Freiberg's disease, 2929
 Friedman pregnancy test 2199
 Friedrich's spinal ataxia 1416
 Frog test for early pregnancy 2619
 Fröhlich's syndrome 1168
 Frontal sinus anatomy of 3589 3-94
 Fundus oculi 3030
 Furuncle 3247
 Gait normal 3077 3493
 Gallbladder anatomy of 3-59
 cholecystitis 2003
 congenital anomaly of x ray 1993
 nonfunctioning x ray 2008
 normal cholecystograph 1988
 Pyrrean cap of x ray 1993
 strawberry 2003
 Gallstones 1998, 2001
 in normal pelvis pyelogram 2518
 Ganglioneuroma x ray 2082
 Gangrene of foot 3090
 Gastric contents Boas Oppler bacilli in 3723
 determination of free and total acidity 3724
 with dimethylamino-azobenzol 3724
 epithelial cells in 3725
 leukocytes in, 3725
 microscopy of 3725
 Gastric contents with phenolphthalein 3724
 titration with indicator dyes 3724
 ulcer 1782
 healed 1817
 phytobezoar with x ray 1807
 x ray 1785
 Gastritis hypertrophic 174-
 Gastro-intestinal hemorrhag electrocardio-gram 817
 Gastrojejunostomy stoma 1745
 Gastroptosis 3499 3490 3491
 x ray 1742
 Gauntlet for carpal fracture 3033
 Gehrung pessary technic of introduction 2342 2-13
 Genitalia, female 3644
 fistulae 2545
 male 2395
 sagittal section posterior view 2397
 Genu varum 2932
 Giant cell tumor bone 2839
 Giardia lamblia 1892
 Gigantism 1166
 Gingivae bismuth deposit in 1675
 Gingivitis due to dactin 3345
 graviarum 1675
 of scurvy 628
 ulceromembranous 1636
 Glaucoma, acute 1380
 chronic cupping of lens in 1380
 Glénard's disease 3490 3490 3491
 Gloma calcified x ray 1491
 Glomerulonephritis acute electrocardio-gram in 327 332
 chronic 2390
 Glomerulus amyloid degeneration in 8
 Glomus tumor 3-01
 Glossitis due to niacin deficiency 3237
 Hunterian 1674
 Glucose in blood 3713 3716
 Glycosuria Benedict test for 3675
 Gold test of spinal fluid 3737
 Gonadotropin precocious sexual development in 2416
 Gonococcus 47
 Gonorrheal conjunctivitis 1617
 dermatosis 3258
 paraphimosis 2192
 phimosis 2123
 salpingitis chronic 2609
 Gout 2872 2873
 Graafian follicles 2488
 Grafts skin 3931
 sliding 3933
 Gram itch 3194
 Granuloma annulare 338-
 eosinophilic 2343
 fungoides 335-
 inguinale 2592 3777
 Donovan bodies in 475
 lessons 476
 Grass Bermuda, geographic distribution 560
 vernal geographic distribution 560
 Grawitz's hypernephroma, 2238
 Great vessels anatomy of 3510 3513 3545
 in lemon of in granuloma inguinale 476
 ringworm of 3296
 Growth, cessation 1176
 Gullet anatomy of 3692
 Gunna of thigh 3280

- Epiphora due to riboflavin deficiency 3337
 Episiotomy technic 2692 2693
 Epithelial cells in gastric content 3725
 in urine 3684
 Epithelioma basal cell 3220
 of lip 1718
 prickle cell 3220
 squamous cell 3220
 Epluchage 3961
 Equinovarus deformity 2250
 Erb's palsy 2776 2952
 Eruption creeping 3193
 feigned 3232
 Frysipelas facial, 165
 Erythema induratum 3263
 multiforme 3375
 bullosa 3375
 iris 3375
 like dermatophytid 3291
 like syphilid 3280
 nodosum 3375
 of legs in sulfathiazole therapy 90
 Erythroblastosis foetalis 1069
 Erythrocytes 1036
 counts 3606 3697
 Esophagogastric hiatus hernia x ray 1802
 Esophagus anatomy of 3602
 carcinoma of x ray 1739
 displacement x ray 1721
 lye burns of x ray 1735
 peptic ulcer of x ray 1737
 stenosis of x ray 1755
 tortuous, cardiospasm with x ray 1725
 traction diverticulum of x ray 1791
 varices of x ray 1729
 Essential hypertension electrocardiogram 817
 Ethmoid sinuses 3,94
 Funehodism before and after treatment 2415
 Gustachian tube catheterization 2018
 Fungus tumor x ray 2815
 Examining room 4043
 table 4045
 Excretions neurotic 2332
 Exfoliative dermatitis 3385
 Eye accommodation 1596
 allergy test in, 554
 anatomy of 3613 3614 3670
 arcus senilis 1593
 arteriosclerotic changes in 307
 atrophy 1422
 binocular magnifier 3623
 cataract 1593
 chorioretinitis, 1634
 conjunctivitis 1617 1650
 distance vision test chart 3626
 eversion of lower lid 2634
 upper lid 2634
 exposure of retrolental fold 2634
 focal illumination of 3622
 fundus 1523 3630
 glaucoma 1580
 hemianopia 1539 1612 1643
 hyperopia, 1536
 in infectious jaundice 359
 iridocyclitis 1604
 iritis of 1604 1631
 keratitis 1628
 keratoconjunctivitis 1624
 macular coloboma of 1563
 myelinated nerve fibers of 1563
 ocular tuberculosis of choroid, 1464
 muscles in cornea movement, 1526
 paralysis of abducens 1649
 of left superior oblique 1647
 myopia 1536
 near vision test chart 3626
 ophthalmoscope 3628
 optic nerve neuritis of 1610
 positive serum sensitivity test in 300
 scleritis of 1631
 section through 3814
 in sympathetic nerve paralysis 1576
 trachoma of 162, 163
 tuberculoma of 1604
 in Wed's disease 2,9
 Eyelid carcinoma 1567
 chronic inflammation, 1610
 coloboma of 1561
 dermatitis of 156, 163
 ectropion of 1570
 eversion of 2634
 ptosis of 1562
 symblepharon of 1570
 xanthelasma of 1567
 Face actinomycosis of 3310
 chancere of 3279
 eruption of in sulfonamide therapy 90
 erysipelas of 165
 radiodermatitis of 3796
 seborrheal eczema 3425
 Facies birdlike 1683
 myxedemic 1191
 Familial anemia hemolytic 1062
 Fat necrosis pancreatic 1940
 Fatty degeneration of heart muscle 8
 Favus 3991
 Faeces See Stool
 Feet See Foot
 Feigned eruptions 3232
 Felon treatment of 3972
 Female genitalia 3611
 pelvis 3646
 bones and ligaments 3611 3643
 vagina 3489 3490 3191
 Femur deformity in dislocated hip 2978
 epiphysis separation, 3041 3042
 fracture, supracondylar 3048
 shaft 3044
 shaft, traction in, 3045
 Ferree-Road perometer 1541
 Fever blister 1671
 cabinet 3789
 Fibrillation auricular electrocardiogram 812
 843 845
 Fibroma 570
 Fibrosis pulmonary cardiac contour in 791
 Ictitious dermatitis 3232
 Field block anesthesia 3918
 Filament count 3703
 Filariasis inguinal nodes 3323
 of spermatic cord 3323
 Finger fracture dressing in 3026
 splint for 29 9
 traction in 3036
 Hippocratic 2003
 Fingernail bed of 785
 Fish scales 3152
 Fistulas genital 2545

- Hydrocele of testis 2431
 congenital 2432
 Hydrocephalus congenital 1409 1410
 Hydrochloric acid in gastric content 3724
 Hydronephrosis bleeding pyelogram 2070
 Hydro-ureteronephrosis 2271
 Hymenolepis nana 1894
 ova in stool 3731
 Hyperextension jacket ambulatory 3009
 Hyperkeratosis due to vitamin A deficiency 3236
 Hypernephroma of Grawitz 2328
 Hyperopia, accommodation 1536
 diagram 1536
 Hyperparathyroidism renal calculus in 1208
 Hyperplasia of thyroid II
 Hypertension cardiac contour in 796
 electrocardiograms in 820 4028
 essential electrocardiogram 817 820 821
 830 841
 malignant electrocardiogram 821 820
 Hyperthermia 3789
 Hyperthyroidism electrocardiogram 825
 Hypertrophy of thyroid gland 8
 Hypodermic injection 3771
 Hystriochopyllu 3188
- Ichthyosis 516
 Idicv amburotic family eye in, 1413
 mongolian 1166
 Idiopathic multiple hemorrhagic sarcoma 3221
 Ileitis regional x ray 1864
 Ileum Meckel's diverticulum of x ray 1865
 Ileus adynamic in peritonitis x ray 1867
 decompression for 4011
 x rays 4014
 Impetigo of Bockhart 3247
 contagiosa 3247
 Incisions for breast abscess 3978
 in epuotomy 2602
 for hands 3975
 Inclive esnal cyst x ray 1713
 Infantile eczema, 3331 3814
 Infarction of lung hemorrhagic II
 Infections p rapsical x ray 1682
 Infectious jaundice eye in 359
 mononucleosis 469
 Infiltration anesthesia in Pott's fracture 2900
 Inflammation in pneumonia 17
 Infusion flasks 3880
 intravenous 3775
 marrow 3777
 Inhalator for carbon dioxide-oxygen mixture 3831
 Injection of hydrocele 3937
 of maulin, 3771
 of internal hemorrhoids 3946
 intramuscular 3771
 intravenous drip 3775
 by syringe 373
 marrow infusion 3777
 subcutaneous 3771
 of varicose veins 3910 3942
 Insulin injection of 3771
 preparations blood sugar curves from 1239
 Internal hemorrhoids injection of 3946
 Intertrochanteric fracture of femur 3040
 Interventricular septal defect, 958
- Intestinal intussusception treatment x ray 1877
 obstruction decompression for 4011
 x ray of 1874 1876 4014
 teniasis epidemiology 1800
 tuberculosis x ray 1861
 Intra auricular septal defect cardiac contour in, 795
 electrocardiogram 83
 Intradermal test for allergy 308
 Intramuscular injection, 3772
 Intravenous drip 3775
 infusion, 3775
 flasks 3780
 injection by syringe 3773
 Intussusception x ray 1877
 Involuntary nervous system 3875
 Indocyclitis tuberculous 1604
 Iritis acie 1631
 tuberculous 1604
 Irradiation, in cancer of nasopharynx 2069
 Ischiorectal abscess 3990
 Itch grain 3193
 mite 3181
 Ixodidae 3192
- JACKET Minerva, 3006
 Jan way lesion in endocarditis 1022
 Jaundice hemorrhagic due to vitamin A deficiency 3236
 infectious yet 349
 in vitamin A deficiency 618
 Jaw adamantinoma of x ray 1715
 ankylosis of 1688
 cyst of 1713
 Jejunal ulcer x ray 1705
 Joint, aspiration of 3949
- KALA AZAR liver in 835
 Kaposi's disease 3221
 Keller Blake splint 3001
 Keloid 3160
 Keratitis herpetic 1628
 interstitial 1648
 Keratoconjunctivitis epidemic 1644
 Keratosis blun rhagica, 338
 K. t. naris tests for 3678
 Kidney anomaly s blood vessels 297
 arteriosclerotic 302
 displacement congenital 2203
 ectopic pyelogram 2093
 floating 2295
 function test, 3689
 in glomerulonephritis 2380
 horseshoe pyelogram 2290
 hypernephroma 2328
 injuries to schematic drawing 209
 polycystic disease of pyelogram 291
 tuberculosis 2347 2348 2349
 Knee aspiration of 3949
 coronal section through 2800
 dislocation 2980
 histoplasmosis of 504
 hypertrophic changes in, x ray 2853
 tuberculosis x ray 2944
 Knock knees corrected by osteotomy 2851
 Kocher man over in dislocated shoulder 2973
 Kochia, geographic distribution of 560

- Gumma of vulva 3280
Gums bismuth deposit in 1675
gingivitis gravidarum 1675
inflammation due to dilantin 3845
lead line in 1675
lymphosarcoma 1718
in thrombocytopenic purpura 1675
sore due to vitamin C deficiency 3239
- Hair, anatomy 3500
dye dermatitis 3331 3814
Hallux valgus 3039
Halo saturninus 1675
Hand incisions for 3075
pellagrous dermatitis of 624
syphilis of 338
tendon sheaths of 3974
Hand Schüller Christian syndrome 1134
x ray 1135
Hanging cast in fractured humerus 3000
Harelip 1684
Hatband dermatitis 3331 3814
Hay fever conjunctivitis 1650
grasses, geographic distribution of 360
Head louse 3183
meningocele of 1408
nerves of 1491
Heart anatomy of 3545
and blood vessels anatomy of 3577
conduction of 774
contour in bronchial asthma, 794
in emphysema 794
in hypertension 796
in interauricular septal defect 795
normal 702 793 794
in pulmonary fibrosis 794
disturbances aneurysm of left ventricle
x ray 707
aortic aneurysm of x ray 798
coarctation of 960
Auerbach body in 188
auricular flutter electrocardiogram 841
842
auriculoventricular dissociation electro-
cardiogram 850
block electrocardiogram 850
brown atrophy of 8
cor pulmonale electrocardiogram 822
coronary artery disease electrocardio-
gram 818 826 829 830 831 832
837 838 844 847 848 849 850
insufficiency electrocardiogram 817
cyanosis electrocardiogram 819
failure conge iva electrocardiogram 823
right electrocardiogram 819
fibrillation electrocardiogram 823
interauricular septal defect of cardiac
contour in 795
interventricular septal defect of 958
Lutembacher's disease 957
mitral stenosis electrocardiogram 801
824 842 843 845 846
valve hyaline vegetation 188
thickening 188
vascularization 188
muscle fatty 8
rheumatic carditis electrocardiogram 820
833 850
valve electrocardiogram 837 842 843
845 846
- Heart disturbances supraventricular tachy-
cardia of electrocardiogram 840 849
tricuspid disease electrocardiogram 824
murmurs phonocardiograms of 3549 3550
normal electrocardiogram 800
phonocardiogram 800
position in chest, 3529
sounds normal 3548
time relation in 775
Heat lamp 3787
Heberden's nodes x ray 2857
Hebra's disease 3375
Heels psoriasis of 3417
Helminthiasis cutaneous 3320 3323 3324
3325 3326 3327
Helminths ova of 1894
Hemacytometer 3696 3697
Hemangioma 3200
Hematocrit 3703
Hematoma, subungual decompression of 3964
Hemianopia 1539 1642 1645
in pituitary adenoma 1158 1159
Hemiplegia spastic 2940
Hemoglobin, determination of 3694
Hemoglobinometer 3694
Hemolymphangoma 3200
Hemolytic familial anemia 1062
Hemometer 3694
Hemophilus pertussis electron microscope view
of 133
Hemorrhage capillary in scurvy 623
gastro-intestinal electrocardiogram 817
Hemorrhagic infarction of lung 11
jaundice of vitamin K deficiency 618
Hemorrhoidectomy 3948
Hemorrhoids 1908
internal injection of 3846
Hemp water geographic distribution of 360
Hepatitis atypical electrocardiogram 827
Hermaphroditism true 2532
Hernia, congenital with hydrocele 2432
hiatus x ray 1802
through Treitz ligament 1604
truss in type 3094
Herpes labialis 1671
plexus 436
of penis 3289
roster 436
of shoulder 3289
Herpetiform dermatitis of pregnancy 3241
lesions, 3289
Hip, dislocation, congenital 2823 2829
tuberculosis x ray 2944
Hippocratic fingers 2063
Hirschsprung's disease x ray 1871
Hives, 3347
Hodgkin's disease lymph cells in 1159
Hookworm eggs in stool, 3731
epidemiology 1904
Hoptosyllus anomalus 3188
Hordeolum, 1610
Humerus fractures hanging cast in, 3000
slung for 3021
x ray 2023 3018 3020
osteomyelitis 2931 2932 2933 2937
Hunterian glossitis in hyperchromic anemia,
1674
Hutchinson's teeth 1671
Hydatidiform mole, 2853
Hydrocele injection 3957

- Meckel's diverticulum x ray 1865
 Mediastinum dermoid cyst of x ray 2089
 dissection, 2510
 lymphosarcoma x ray 2063
 Melanin pigmentation in Addison's disease 1274
 Melanocarcinoma 3221
 Menge pessary 2541
 introduction of 2541
 Meningioma, hyperostosis from, x ray 1473
 of tuberculum sellae hyperostosis of x ray 1423
 Meningitic curve of spinal fluid 3797
 Meningocele 1408, 2821
 Meningococci, 4"
 Menstruation endometrial phases in 2492 2493
 Mercury lamp 3795
 poisoning calcification in 9
 Mesenteric embolism electrocardiogram 84
 Metacarpals fracture 3036
 Microfilaria 3315
 Microscopy of gastric content 3725
 of urine 3682 3683 3684 3685
 Mikulicz disease 1710
 Miliary tuberculosis, 257
 Minerva jacket application, 3006
 Mite 3190
 causing scabies 3181
 Mitral stenosis electrocardiogram 801 824
 826 842 843 845 970
 phonograms in 8549
 stethogram 801
 Mixed-cell sarcoma, 575
 Mole hairy 3701
 nonpigmented 3700
 pigmented 3200
 Molluscum contagiosum generalized 3289
 of glans penis, 3289
 Mongolian idiocy 1166
 Monilia albicans 437
 Mondriass 3494
 of lungs 503
 paronychia 3453
 Mouth anatomy of 3797
 tuberculous ulcer of 1671
 Mucous patch of lip 3740
 Murmur(s) cardia in mitral stenosis 801
 phonocardiograms of 3549 3550
 Murray-Jone splint 3001
 Muscles of abdomen 8 53
 anatomy of 3575
 Muscular dystrophies pseudohypertrophic 2385
 Mycobacterium tuberculosis 29
 Mycosis, 3294 3295 3903 330 3310 3311
 3312, 3313 3314 3315
 fungoides 3385
 of nails 3453
 Myeloma endothelial 2845
 pathologic fracture with 2847
 Myiasis dermal 3193
 Myocardial damage electrocardiogram 827
 829 831 837 837
 infarction acute electrocardiogram 814 815
 816
 Myocarditis with trichinosis electrocardiogram, 834
 Myomas uterine 2554
 Myopia diagram of parallel rays in 1536
 Myringitis acute 2162
 Myxedema facies 1194
- NAILS lesions of 3457
 psoriasis of 3453
 ringworm of 3791
 of toe removal of 3944
 Napkin dermatitis 3160
 Nares atresia, before and after operation, 2044
 Nasal cavity anatomy of 3589
 sagittal section 2021
 fossa diagram 20 2
 frontal section 2023
 mask for oxygen 3973
 sinuses x rays 2126 2127
 Nasopharynx radium implantation, 2069
 Necator americanus 1894
 ova in stool, 3751
 Neck broken transportation in 2968
 distraction 3006
 traction in 3007
 dissection, 3510
 nerves of 1481
 Necrobiosis lipodica diabeticorum 3241
 Needling in bursitis 2901
 Nephritis, acute 2567 2574
 arteriosclerotic hyaline changes in 903
 hemorrhages in 2567
 Nephropostis urogram, 2295
 Nephrosis electrocardiogram 834
 Nerve block anesthesia, 3918
 Nerve(s) fibers medullated 1503
 of head 1481
 peripheral cutaneous fields of 1494 1495
 1496 1497
 segmental 1472 1473
 sympathetic, effect of paralysis on eye 1576
 Nervous system autonomic 3873
 Nerve optic 1640
 peripheral of legs 618
 due to vitamin B deficiency 3238
 Neurocirculatory asthenia, electrocardiogram, 809 813
 Neurdermatitis, atopic 550 3331 3314
 Neurofibromatosis 3201
 multiple general, 1414
 Neurotic excretions 3232
 Neri 3200 3201
 capillary 3700
 Niacin deficiency 3237
 glossitis in, 614
 Niemann Pick disease eye in 1413
 Nipple dissection, 33 1
 Paget's disease of 2580
 Nodular leprosy 275
 Nose accessory sinuses 3794
 anterior rhino copy of 3597
 deformity before and after operation 2044
 fractures, 3013
 Nosopyllus fasciatus 3188
- OBESITY buffalo 1161
 electrocardiogram 803 810 813
 Obstetric(s) delivery 2700 2712
 paralysis 2952
 Obstructive, intestinal, x ray 1874
 Occupational dermatitis 3332, 3315
 Oculomotor paralysis 1529
 Office dressing room 4045 4046
 equipment 4046
 examining room 4045 4046
 table 4045 4046

- Koilonychia 3452
 Koplik's spots 410
 Kyphosis adolescent x ray 2927
- LACERATION** 3968
 Lacrimal apparatus anatomy of 3613
 Lamp heat 3787
 mercury 3795
 quartz 3795
 ultraviolet 3795
- Laryngitis tuberculous 2162
 Laryngoscope 2025
 Larynx anatomy of 3, 97
 carcinoma 2073
 dissection 3513
 paralysis 2092 2093
 sagittal section 2091
- Lead line in plumbum 1675 1677
- Leg amputation of** 3954
 blastomycosis of 3311
 chromoblastomycosis of 3315
 edema of in vitamin B deficiency 618
 erythema nodosum of in sulfathiazole therapy 90
 leishmaniasis of 3317
 syphilid of 3280
- Leishmania donovani 48 3318
 Leishmaniasis, American 3317
 of leg 3317
 tropica 3319
- Lepra cells** 274
- Leprosy** lepra cells in 274
 mixed 270
 nodular 275
 tubercular 275
- Leukemia** 1104
 chronic leukemic granulocytic 1101
 lymphocytic, 1104
 lymphatic black tongue in 1696
- Leukocytes** 1037 1039
 counts 3695 3697
 in gastric content, 3795
- Leukonychia 3452
- Leukoplakia 1690 3201
- Lice 3184
- Lichen planus** 3397
 simplex 3160
- Lip chancre of** 3279
 cleft 1684
 cyst of 1713
 epithelioma of 1718
 herpes of 1671 3289
 mucous patch of 333, 3280
 scarring in riboflavin deficiency 628
- Lipid pneumonia** 2049
- Lipiodol injection into subarachnoid space**
 x ray 3075
- Lipstick dermatitis** 350 3331 3314
- Liver abscess** 326
 anatomy of 3559
 cirrhosis of 9
 echinococcus cyst of 1901
 in kala-azar 335
 lepra cells in 274
- Loa loa 3324 3325
- Local anesthesia, 3918
- Loose body in osteochondritis dissecans 2962
- Louise of head 3183
- Lueric curve of spinal fluid 3737
- Lumbar plexus anatomy of 3, 83
 puncture 3781 3782
- Lumbosacral support, 3070
- Luminal dermatitis from 3332 3315
- Lung abscess** x ray 2214
 putrid x ray 2217 2218
 actinomycosis 491
 anatomy of 3531 3532
 aspergillosis x ray 2213
 blastomycosis x ray 2211
 carcinoma primary x ray 2079
 coccidioidomycosis 500
 x ray 2242
 cryptococcosis of 497
 cystic disease 2045
 emphysema barrel shaped chest in 2057
 x ray 2053
 hemorrhagic infarct of 13 2087 2089
 moniliasis of 503
 postoperative collapse of 4017
 torulosis x ray 2211
 tuberculosis of 253 4097
 miliary 254
 primary 255
- Lupus erythematosus** 1019 3397 3400
 of palate 1669
 miliaris disseminatus faciei, 3263
 vulgaris 3263
- Lutembacher's disease 937
- Lye burns of esophagus** x ray 1735
- Lymphangioma** 3200
- Lymphatic leukemia** black tongue in 1696
- Lymphoblastoma** 3221
- Lymphogranuloma venereum** 470
- Lymphopathia venereum** 3277
 skin test in 3277
- Lymphosarcoma of gum** 1718
 of mediastinum x ray 2083
- MACULAR atrophy due to syphilis** 3103
 syphilid 3280
- Maculopapular syphilid** 3280
- Maduromycosis of foot** 3314
- Magnifier binocular** 1354
- Maladie de Roger** 958
- Malaria, Plasmodium vivax in** 508
- Male genitalia pelvic**, 3397
 pelvis anatomy of 3635
- Malignancy of skin** 3220 3221
- Malignant pustule of anthrax** 3273
- Malleolus fractures reduction** 30, 0
- Mandible cyst of** x ray 1713
 median section, 3305
 monocystic adamantinoma of x ray 1715
- Mandrin, flexible for introduction of catheter**
 2940
- Manipulation in low back sprain**, 3061-3068
 Walton 3006
- Marble bones** 2380
- Mare-Durumpeil spine** x ray 2915
- Marrow infusion** 3777
- Mask BLB for oxygen** 3323
 nasal for oxygen 3323
 oronasal for oxygen, 3323
- Mastoid anatomy of** 3510
 process, normal x ray 2145
 Mastoiditis x ray 2145
- Maxillary sinus anatomy of** 3589 3591
- Measles Koplik's spots in** 410

- Pessary Gebrung 2542
 introduction of 2542 2543
 Hodge, 2540
 Menge, 2541
 introduction of 2541
 rug 2540
 introduction of 2540
 Smith, 2540
 Thomas 2540
 Peyer's patches in typhoid fever 228
 Pharynx, anatomy of 3597 3602
 dissection, 3515
 sagittal section 2021
 Phenobarbital dermatitis from, 3815
 Phenolphthalein, dermatitis from 3332, 3815
 for titration of gastric acidity 3724
 Phenolsulfonphthalein test, 3659
 Phimosis, gonorrheal 242-, 2423
 Phlebotomus verrucosus 3191
 Phlebotomy flasks, 3840
 Phonocardiograms, 3548
 in mitral stenosis, 3549
 of normal heart 800
 Photophobia due to riboflavin deficiency 3237
 Phrygian cap of gallbladder x ray 1993
 Phytobezoar with gastric ulcer 1607
 Pigmentation in Addison's disease, 1274
 Piles 3946 3948
 Pilonidal cyst, 3945
 sinus 3945
 Pinta, lesion, 334
 Pinworm eggs in stool 3731
 Pituitary adenoma, visual fields in 1158 1159
 Pityriasis rosea 3411
 Placenta praevia 2661
 premature separation, 2666 2667
 Plagu epidemiology 30
 Plantaris tendo rupture site, 2958
 Plasmodium falciparum 511
 malariae 512
 vivax diff diag 508
 Plaster-of-paris bandage in elbow or forearm
 fracture 299 2999
 Pleural cavities anatomy of 3532
 effusion 258
 x ray 2221
 Plexus cervical and brachial, 3582
 lumbar and sacral 3583
 Pneumococci, 47
 quelling of 92
 Pneumonia, atypical, x ray 402 403 2187
 lipid x ray 2049
 lobar inflammation in 17
 x ray 2175
 Pn umonitis chronic tuberculous caseous
 x ray 2200 2204
 Pn umoradiography perirenal, x ray 2253
 P umothrax artificial x ray 908
 set 2031
 x ray 2034
 Podagra 2871
 Poisoning digitalis electrocardiogram 847
 lead gums in, 1675
 mercury calcification 9
 Polymyelitis anterior 290
 Polypoid of colon, 1867
 Port wine mark, 3200
 Portal vessels anatomy of 3578
 Post horial ndometritis 2607
 Posture 1014 1015
 Posture faulty 3056
 Pott's fracture 3045 3049
 infiltration anesthesia in, 2990
 Poulqueu hitch, 2933
 Prairie sage geographic distribution 560
 Precordial pain, electrocardiogram 814 815
 Pregnancy gingivitis of 1675
 herpetiform dermatitis of 3241
 pyelitis 2354
 test, Friedmann positive 2193
 frog 2619
 tubal, 2659
 uterus in, 2622
 Prickle cell epithelioma, 3220
 Progressive lenticular degeneration 1417
 Prone pressure in method of artificial respiration,
 3 67
 Prostate gland calculi x ray 2437
 hypertrophy 2446
 Prunus ans, 1908
 Psoriasis 3417
 of nails, 3453
 Ptosis of eye lid, 156
 Pubertas praecox, 1165
 Pulex irritans 3183
 Pulmonary edema, electrocardiogram 819
 embolism, 2067
 emphysema, 2057
 fibrosis, cardiac contours 794
 tuberculosis 4027
 Pulse tracings 783
 venous, time relation in 75
 Puncture cisternal 3783
 lumbar 3781 378
 Pupil, occlusion of 1604
 Purpura rheumatica, 112
 simplex, 3125
 thrombocytopenic oral signs 1675
 Pustular acne 3358
 folliculitis, 3247
 Pustule of anthrax, 3273
 Pyelitis, of pregnancy urogram, 2354
 Pyelograms normal, 2249 2250
 Pyelonephritis chronic, pyelogram 2357
 Pyelovenous backflow 2318
 Pyloric obstruction electrocardiogram 835
 stenosis, in infancy peristaltic waves in,
 2735
 x ray 1798
 Pyoderma 3247
 pediculosis 3183
 Pyopy umothorax, 2218
 Pyorrhea alveolaris 100
 Pyosalpinx tuberculous 2610
 QUANTZ lamp 3795
 Quelling of pneumococci, 20
 RADIODERMATITIS, 3160 3796
 Radium implantation in nasal tumor 2069
 Radius of digital epiphyseal end 2796
 fracture lines 3026
 Ramula, 1713
 Rash chickenpox 421
 German measles 417
 measles 411
 meningitis 212
 rubella, 417

- Olecranon bursitis 2002
 Onchocerca volvulus 3326
 Onychomycosis 3294 3433
 Oogenesis 2468
 Ophthalmic test for allergy 554
 Optic atrophy 1413 1422
 neuritis 1640
 Orbit anatomy of 3620
 Ornithodoros hermsi 3182
 Oronasal mask for oxygen, 3828
 Osgood Schlatter's disease 2923
 Osteitis fibrosa cystica x ray 1227
 Osteo arthritis of spine 2259
 Osteo-arthritis hands in x ray 2837 2861
 lumbar vertebrae in x ray 2860
 Osteochondritis dissecans loose body in, 2902
 syphilitic 2939
 Osteochondroma x ray 2637
 Osteogenic sarcoma 2643
 Osteoma of skull x ray 2837
 osteoid of tibia 2840
 Osteomalacia 2853
 Osteomyelitis of humerus x ray 2931 2932
 9933 2937
 oral x ray 1706
 Ova in stool, 3791
 in urine 2685
 Ovary arrhenoblastoma 2574
 Brenner tumor 2370
 carcinoma, solid 2571
 choriole cysts of 2559
 cystadenoma of 2568
 cysts of dermoid 2569
 follicular incision 2566
 dysgerminoma of 2572
 granulosa cell tumor 2573
 sarcoma of 2575
 section 2488
 Oxygen analyzer 3830
 and carbon dioxide inhalator for 3631
 mask 3938
 tent 3839
- PACHYTONCHIA** 3459
 Paget's disease 2531
 of nipple 2530
 Pain precordial electrocardiogram 814 815
 Palate lupus erythematosus of 1669
 mixed tumor of 1718
 sagittal section 2021
 secondary syphilis of 1671
 Palm syphilid of 338 3780
 tendon sheaths of 3974
 Palmar space incisions 3975
 Palmer's amaranth geographic distribution
 560
 Palsy birth 2932
 Erb's, 2932
 Pancreas anatomy of 3533
 Pancreatic necrosis 1940
 Papilledema 1578
 Papilloma of bladder 2344
 Papular syphilid 3280
 Para-esophageal hernia, x ray 1802
 Paraffinoma 3201
 Paralysis of eye muscle abducens 1648
 left superior oblique 1647
 of larynx 4032 4093
 muscular pseudohypertrophic 2885
- Paralysis obstetric 2952
 oculomotor 1529
 of sympathetic nerve 1676
 Paraphimosis gonorrheal 2122
 Parapsoriasis varioliformis 3417
 Parasympathetic nervous system 3879
 Parenchymatous degeneration, 8
 Paretic curve of spinal fluid 3737
 Paronychia 3453
 treatment of 3972
 Parotid glands 3591
 Patch test tuberculin 964
 Patent ductus arteriosus 058
 Pathologic fracture 2347
 Pediculosis capitis 3183
 pyoderma 3183
 Pellagrous dermatitis due to niacin deficiency
 3237
 Pelvis bones and ligaments anatomy of 3571
 female 3645
 bones and ligaments 3641 3643
 male anatomy of 3635
 sagittal section 2395
 normal gallstones in pyelogram 2318
 Pemphigus 3411
 of conjunctiva 1565
 Penis chancre of 3279
 chancreoid of 289 3275
 circumcision, 3936
 clamp 2254
 in granuloma inguinale 3277
 lichen planus of 3397
 lymphopathia venereum of 3277
 molluscum contagiosum 3489
 poorosis of 3417
 structure 2394
 Peptic ulcer 1752
 healed 1817
 phytobezoar with x ray 1807
 x ray 1783 1817
 Perforating ulcer 3229
 Perianal abscess 3980
 Periapical infection x ray 1682
 Periarthritis nodosa arteriolar infiltration in
 1028
 electrocardiogram 636
 Pericardial effusion electrocardiogram 834
 Pericarditis acute electrocardiogram 819
 Pericoronar abscess of tooth 1696
 Perimeter Perce-Rand 1541
 Perineal tear 2536
 Perinephric abscess 2360
 Periodontosis x ray 1700
 Peristaltic syphilid x ray 4033 4039
 Periphera nerves cutaneous fields of 1494
 1493 496 1497
 neuritis 618
 Peristaltic waves in pyloric stenosis 2735
 Perleche 1696
 Pernicious anemia 1079
 obstruction of vein in 2589
 Perno 3160
 Perthes test for varicose veins 2940
 Pertussis cough plate in 281
 electron microscope view of organism in
 138
 Pex cavus 2830
 before and after operation 2037
 plavus 2830
 valgoplavus 3086

- Septal defect interventricular 358
 intra-auricular electrocardiogram 823
 Serum sensitivity tests in eye III
 Sexual development precocious 2416
 Shoes corrective 3082 3083 3094
 ideal 3081 308
 Short wave treatment 3788
 Shoulder anatomy of 3-73
 dislocation of 2972
 subclavicular 2972
 subspinous 2972
 herpes zoster 3289
 Sickle cell anemia 3705
 Sigmoid carcinoma of x ray 1890
 volvulus of x ray 1876
 Signet ring stone x ray 1999
 Silicosis x ray 1063
 Simmonds disease 1171
 Simpson's forceps 2093
 Sinuses frontal 3594
 maxillary 3-94
 nasal 3-94
 x ray 2120 2127
 paranasal, frontal section 2029
 pulvinar 3945
 sphenoid 3594
 Siphonaptera, 3188
 Sitting posture 1014 3493
 Skeletal traction 3045
 Skin anatomy of 3499
 flaps 3933
 grafts 3934
 leg traction in bumper fracture 3000
 lichen planus of 1689
 rash in chickenpox 421
 in measles 411
 in Rocky Mountain spotted fever 378
 in smallpox 424
 in sulfathiazole dermatitis 90
 test in allergy 555 5-8
 brucellergen reaction 318
 of chancreoid 3275
 in lymphopathia venereum 3-77
 Skull frontal section 3508
 median section 3505
 osteoma x ray 2937
 Sleeping posture 3493
 Slug and swathe for fractured humerus 3021
 Slit lamp view of eye through 1814
 Smallpox rash 424
 Smears vaginal 2496 2497
 Smoking hypertens on and 3886
 Sounds, heart normal 300
 Spastic diplegia 2949
 hemiplegia, 2949
 Spermathecae 3188
 Spermatheca anatomy of 3636
 c o s s section 2396
 filariasis of 3323
 Spermatocoele drawing 2135
 Spermatozoa, 2400
 structure 2399
 Sphenoid sinus anatomy of 3589 2594
 Spina bifida 1412 2821
 Spinal ataxia Friedrich's 1416
 block anesthesia 3918
 cord, tumors of 1431
 fluid colloidal gold test 3-37
 puncture 3781 3782
 Spindle cell sarcoma 375
 Spine blastomycosis of 494
 cervical dislocation traction, 3007
 fracture cast in 3008
 fracture-dislocation of cast in 3008
 Marie-Strümpell 2915
 tuberculosis x ray 2943
 Spirochetes darkfield examination of 46
 Spl en anatomy of 3559
 Splint(s) abduction types 3019
 airplane 3019
 for elbow 2994 2995
 for fractured finger 2959
 Keller Blake 3001
 Murray-Jones 3001
 Thomas 2992
 Splintage in fracture of forearm 2991
 of radius 2991
 Splitting of nails 3452
 Spodilytus ankylosing x ray 2915
 deformans 2859
 Spodilytosis 2970
 Spoon nails 3452
 Sporotrichosis of thumb 3312
 Sprengel's deformity 7825
 Sputum elastic fibers 3719
 Squamous cell epithelioma, 3-20
 Standing posture 3493
 Status asthmaticus electrocardiogram 823
 Stave fracture of thumb 3035
 Steer horn stomach x ray 1741
 Stenosis of esophagus x ray 1755
 mitral electrocardiogram 301 8-4 8-6 8-12
 8-13 8-15 9-70
 steibogram of 801
 pyloric, in infancy peristaltic waves in, 2736
 x ray 1798
 Stomach adenocarcinoma of x ray 1815
 carcinoma x ray 1815 1818
 cascade x ray 1805
 contents Boas Oppler bacilli in 3723
 fallen 3489 3490 3491
 fish hook x ray 1742
 foreign bodies found in 1807 3985
 gastroptosis of x ray 1742
 hyperthemic x ray 1741
 lymphosarcoma x ray 1817 1818
 polyps of x ray 1815
 pyloric stenosis of x ray 1798
 steer horn x ray 1741
 thoracic, x ray 1732
 ulcer 1782
 healed 1817
 Stomatitis aphthous 1696
 Stool amoebae in 3731
 Ascariis ova in 3731
 blood fluke eggs in 3731
 Bothrocephalus ova in 3731
 Diphyllbothrium ova in 3731
 Eudamoeba histolytica ova in 3731
 Euterobius ova in 3731
 hookworm eggs in 3731
 Hymenolepis ova in 3-31
 Necator ova in 3731
 pinworm eggs in 3731
 roundworm eggs in 3731
 Schistosoma ova in 3731
 Taenia ova in 3731
 tapeworm eggs in 3731
 Trichurus ova in 3731

- Rash scarlatiniform 417
 smallpox 424
 typhus fever 370
 yaws 352
 Rat bite fever lesion in 362
 Rectal anesthesia 3979
 fistula 3980
 Rectocele 2536
 Rectum anatomy of 3564
 carcinoma x ray 1917
 fissure of 1909
 in Hirschsprung's disease x ray 1871
 local anesthetic technique 3979
 papilla of 1909
 Red blood cells 1036
 counts 3696 3697
 Reduction in Colles fracture 3031
 of dislocated shoulder Kocher maneuver in 2978
 Refrigerating gas dermatitis from 3331 3815
 Relapsing fever blood smear in 338
 Renal calculi in hyperparathyroidism 1298
 circulation 2929
 ectopia, 2903
 function test 3699
 injuries 2309
 tubule diagram 2238
 Respiration artificial 3767
 Resuscitation methods 3767
 Reticulated red cells 3703
 Retinal vein obstruction 1589
 thrombosis 1588
 Retinopathy arteriosclerotic 1586
 diabetic 1598
 Retrolental fold exposure of 3621
 Rheumatic carditis electrocardiogram 890
 833 850
 endocarditis mitral valve vegetations in 1016
 valvular defect electrocardiogram 837 842
 843 845 846
 Rheumatoid arthritis stages 2912
 x ray in, 2914
 Rhinophyma 3339
 Rhinocopy anterior 3592
 Rhodanus 3194
 Rhythm trigeminal electrocardiogram 838
 Rib cervical 9819
 Riboflavin deficiency 3237
 scarting of lips in 628
 Rickets teeth in 1674
 vitamin D deficient 618
 x rays 2951
 Rickettsia orientalis photomicrograph 366
 proteazaki photomicrograph 366
 Ringworm of beard 3303
 of body 3294
 of foot 3294
 of groin 3295
 of hairs 3294
 of scalp 3294
 Rocky Mountain spotted fever animal in
 injection in 63
 rash in 378
 Rodent ulcer 3220
 Roentgenography dental 1657 1658 1659
 Rose spots in typhoid fever 231
 Round cell sarcoma 575
 Roundworms 3320
 eggs in stool 3731
 Run around abscess treatment of 3972
 Russian thistle geographic distribution of 560
 SACRAL plexus anatomy of 3583
 Sacro iliac belt 3070
 Sacrum abnormal 2684
 Sage prairie geographic distribution of 560
 Sagebrush geographic distribution of 560
 Salivary glands 3594
 calculi in x ray 1711
 Salpingitis gonococcal 9609
 Sandfly 3191
 Saphenous vein ligation for varicose veins 3940 3943
 Sarcoid leprosy 276
 Sarcoidosis 3263
 Sarcoma 2843
 idiopathic multiple hemorrhagic 3221
 mixed-cell 575
 of ovary 575
 round-cell 575
 of skin 3921
 spindle-cell 575
 of thyroid 575
 Sarcophages scabies 3181
 Scabies of genitals 3183
 mite 3181
 of wrists 3183
 Scalp furus of 3294
 frontal section 3303
 ringworm of 3294
 Scarlatinal angina 177
 Scarlet fever Dick test in 58
 Schultz-Charlton reaction in 164
 Schanz collar 2967
 Schaudman's sarcoid 3263
 Schick test positive 302
 Schilling count 3703
 Schitz tonometer 1545
 Schistosoma haematobium 540
 Schistosoma dermatitis 3195
 ova in stool 3731
 in urine 3635
 Schultz Charlton reaction 164
 Scleral injection due to riboflavin deficiency 3237
 Scleritis 1631
 Sclerodactylia 3428
 Scleroderma 3428
 Sclerosis tuberosa adenoma in 1414
 Scoliosis congenital 3059
 habitual 3061
 paralytic 3061
 Scotomas diagrams 1543
 Scratch tests in allergy 55
 Scrofuloderma 3263
 Scrub typhus 387
 Scurvy capillary hemorrhage in 628
 gingivitis of 628
 due to vitamin C deficiency 3239
 x ray 2854
 Sebaceous adenoma 3149
 glands anatomy of 3500
 Seborrheal dermatitis 3425
 eczema, 3425
 Secondary syphilis 3280
 Sella turcica in adenoma x ray 11.7
 Seminal tract x ray 2253
 Seminoma of testes 2442

- Tinea cruris** 3295
pedis 3294
versicolor 3294
Too gouty arthritis of 2871
Toenail removal of 3044
Tongue anatomy 3597
 black, in leukemia, 1696
 in cretinism 1192
 epidermoid carcinoma of 1719
 geographic 1686
 Hunterian glossitis 16
 lichen planus on, 1669
 magenta, 1674
 mucous patch on 1671
 in niacin deficiency 624
 scrotal 1686
 strawberry 177
Tonsillar diphtheria 303
Tophi, in gout 2872 2873 2874
Torticollis congenital 2317
Torula histolytica in spinal fluid 486
Torulosis of lung x ray 2211
Torus palatinus 1638
Trachea anatomy of 3591
Tracheal catheter 2789
Tracheotomy 2957
Trachoma 1645
Traction, hitches types 2993
 skeletal 3045
 skin leg after bumper fracture 3000
Transfus on agglutination tests for 3711
 flasks 3880
Transportation in broken back, 2969
 in broken neck 2968
 in fracture traction hitch in, 2993
Treitz ligament hernia through x ray 1804
Trendelenburg test for varicose veins 3939
Treponema genitalis darkfield smear of 46
 microdentium darkfield smear of 46
 pallidum culture of 20 46
Triatoma 2184
Trichinosis, intra-cutaneous test for 541
 myocarditis in, electrocardiogram 834
Trichurias ova in stool, 3731
Trichomonas vaginalis 2596
Trichophytid from ringworm of foot, 3331 3815
Trichuris trichiura ova, 1894
Tricuspid disease electrocardiogram 824
Trigeminal rhythm electrocardiogram 833
Truss for hernia types 3094
Trypanosoma gambiense smear of 48
Tsetse gamushu fever lesion of 382
Tubal pregnancy 2659
Tubercle bacilli in urine 9690
Tubercular leprosy 275
Tuberculin test patch 264
 positive 263
Tuberculous of eye 1604
Tuberculosis of ankle 2945
 a symptomatic x ray 260
 of carpus x ray 2346
 of choroid 1464
 dissemination x ray 257
 of hip x ray 2944
 intestinal, x ray 1861
 of knee, x ray 2944
 of lung in roscopy 253 254 4027
 primary x ray 255
 satellite of choroid 1464
 x ray 257
Tuberculosis Mycobacterium tuberculosis,
 smear in, 29
 pathology 253 254
 pneumonic x ray 2200
 pulmonary inflammation in 17
 renal 2347 2348 2349
 of skin 3263
 of spine x ray 2943
 of uterus 2610
 of vocal cords 2162
Tuberculosis induratus 1604
 iris 1601
 ulcer of mouth 1671
Tularemia lesion of 319
Tumor See also Carcinoma,
 adenomatous, x ray 1715
 adenofibroma of breast 576
 brain electrocardiogram 837
 x ray 1421 1425 1424 1425
 cranio-pharyngioma effect on growth 1176
 ependymoma x ray 1424
 epithelioma of lip 1718
 fibroma 570
 glioma x ray 1431
 lymphosarcoma of gums 1718
 of stomach 1818
 meningioma x ray 1423
 papillomatous of bladder 371
 sarcoma mixed-cell, 575
 ovary 575
 round-cell 575
 spindle-cell 575
 thyroid 575
 of skin 3200 3201
 of spinal cord 1481
 teratoma of brain x ray 1423
 uterus hyaline changes in 8
Tunga penetrans 3188
T₁ wave inverted in electrocardiogram, 835
T₂ wave inverted in electrocardiogram 835
Tympanic membrane normal 214
 retracted, 214
Typhoid fever rose spots in 231
 ulceration of Peyer's patches in 228
Typhus an mal inoculation in 63
 rash, 370
 scrub lesion of 382
Ulcer, duodenal electrocardiogram 896
 perforation x ray 1790
 x ray 1786
 gastric 1782
 healed 1817
 phytobezoar with x ray 1807
 x ray 1785
 jejunal x ray 1795
 of esophagus x ray 1737
 healed 1817
 phytobezoar with x ray 1807
 peptic, 1782
 perforating 3229
 rodent 3220
 of stomach phytobezoar in 1807
 tuberculous of mouth, 1671
 varicose 3947
Ulcerative colitis diffuse x ray 1858
Ulna, fracture lines 3096
Ultraviolet lamp 3795
Uncaria ova in stool, 5 31

- Stool trophozoites in 3731
 Uncinaria ova in 3731
 whipworm eggs in 3751
 Strabismus 1549 1550
 Strapping in low back sprain 3069
 in weak foot 3079
 Strawberry mark 3200
 tongue 177
 String sign in colon x ray 1954
 Style 1610
 Subarachnoid space lipiodol injection in x ray 3075
 Sublingual glands 3591
 Submaxillary glands 3594
 Subungual abscess treatment of 3072
 hematoma decompression 3064
 Sulfamylisulfathiazole chemical structure 89
 Suction bottle outfit for therapeutic puncture 2030
 Sugar in blood 3718 3716
 in urine test for 3675
 Sulfadiazine chemical structure 89
 Sulfapyridine chemical structure 89
 Sulfasuxidine chemical structure 89
 Sulfathiazole chemical structure 89
 dermatitis 3331 3814
 Sulfonamide chemical structure 89
 crystals in urine 3581
 dermatitis 90 550
 Suprapubic cystostomy and cystostomy 3956
 Supraventricular tachycardia electrocardiogram 840 849
 Suture delayed 3972
 technics 3930 3931 3932
 of tendon 3953
 Sweat glands anatomy of 3500
 Sycosis barbae 3247
 vulgaris 3247
 Symblepharon 1570
 Sympathetic nerves 3582 3583
 nervous system 3873
 Synechys scintillans 1593
 Synechia anterior 1604
 Syphilid of body 338
 of palm 338
 Syphilis alopecia areata of 3441
 of cervix uteri 2590
 chancre 3279
 darkfield smear in 40
 erythema multiforme-like syphilid 3280
 gumma of 3280
 Hutchinson's teeth in 1671
 macular atrophy due to 3103
 syphilid 3280
 maculopapular syphilid 3280
 mucous patch 3280
 of lip in 338
 papular syphilid 3280
 primary chancre in 335
 lesion 3279
 of anus 3279
 of face 3279
 of lip 3279
 of penis, 3279
 of vulva 3279
 secondary lesions 3280
 of soft palate 1671
 spinal fluid gold curve 3737
 tertiary lesions, 3280
 variiform syphilid 3280
- Syphilitic curve of spinal fluid 3737
 Syringe for urethral injections 2251
- Tachycardia supraventricular electrocardiogram 840 849
 Taenia ova in stool, 3731
 Talipes calcaneus 2830
 equinovarus 2830
 equinus 2830
 paralytic 2950
 Tapeworm eggs in stool 3731
 Tar dermatitis from 3331 3815
 Tay-Sachs disease optic atrophy in, 1413
 Tear glands anatomy of 3613
 Teeth calculus formation on, 1699
 canines of x ray 1702
 Hutchinson's 1671
 infections periapical 1682
 x ray 1664
 pericoronal abscess of 1696
 in rickets 1674
 serial x ray 1637 1638 1639
 wisdom x ray 1665 1681
 Teleoroentgenogram 709
 Tendon sheaths of hand 3074
 suture 3953
 Tetanus intestinal epidemiology 1900
 Tenorrhaphy 3953
 Teosovnovitis incisions for 3975
 Test for oxygen 3829
 Teratoma, of testis 2442
 Tertiary syphilids 3280
 Testes hydrocele 2431 2432
 mal descended diagram 2425
 seminoma 2442
 teratoma 2442
 Testicle 2396
 Tests intradermal for allergy 558
 ophthalmic for allergy 564
 skin in allergy 553
 in chancreoid 289
 tuberculin, positive 263
 Thelar space incisions 3975
 Thick gums of 338 3280
 Thistle Russian geographic distribution 566
 Thomas splint knee 2992
 Thoracentesis suction bottle outfit for 2050
 Thorax anatomy of 3532
 Thrombo-angitis obliterans artery in, 1079
 electrocardiogram 4028
 section of artery 4079
 Thrombocytopenic purpura gums in 1673
 Thrombosis in vena cava 12
 Thumb sporotrichosis of 3312
 Thyroid in exophthalmic goiter microscopy 610
 hyperplasia of microscopy 8
 hypertrophy of microscopy 8
 sarcoma of 575
 Thumb stove fracture of 3095
 Thymus gland, enlarged 1234
 Tibia osteochondritis of 2939
 osteoma of 2940
 periostitis of 2938 2939
 Ticks 3192
 Timothy geographic distribution 560
 Timea barbae 3303
 capitis 3294
 corporis 3294

- Whooping cough electron microscope view of 2291
H. pertussis, 133
 specimen plate in 231
- Wilson's disease, 1417
- Windpipe, dissection 3513
 tracheotomy 3957
- Wintrobe tube 3 03
- Wisdom tooth, pericoronal abscess on, 1696
 x ray 1665 1681
- Wound avulsion, 3967
 cleansing 3963
 debridement, 3960 3961 3962
 epithelization 3961
 healing, 3969
 lacerated 3968
- Wrist, fracture, splints in, 2291
- Wryneck congenital 2817
- Wuchereria bancrofti*, 3323
- XANTHELARMA* of eyelid 1567
- Xantheloma, 3241
- Xanthoma tuberosum 3241
- Xenopsylla cheopis*, 3153
- Yaws, secondary eruption in, 352
- ZENKER diverticulum x ray 1731

- Ureterocele pyelogram 2271
 Ureters duplication 2283 2288
 kinking ureterogram 2297
 lesions schematic drawing 2266
 strictures 2305
 Urethra lesions urethroscopic views 2246
 structure gonorrheal 2267
 Urethral catheter method of retaining 2210
 types 2233
 injections *in ring* for 2284
 instrument passage of technique 2235 2236
 2237 2238
 Urinary crystals 2312 2313
 obstruction 2266
 passageways duplication, 2289
 system anatomy of 2636
 tract duplication pyelogram 2289
 Urine acetone test 3678
 acidosis test 3678
 Benedict test for sugar 3675
 casts in 3682
 crystals 3681
 diacetic acid test 3678
 epithelial cells in 3684
 erythrocytes in 3683
 ferric chloride test 3678
 formation diagram 2229
 Gerhardt test 3678
 ketosis test 3678
 leukocytes in 3684
 microscopy of 3684
 ova in 3685
 phenolsulfonphthalein test 3689
 pus in 3684
 red blood cells in 3685
 renal function tests 3689
 schistosoma ova in 3685
 sediments 1891
 sodium nitroprusside test 3678
 sulfonamide crystals in 3681
 threads in 3683
 tubercle bacilli in 3690
 white blood cells in 3684
 Urogram intravenous normal 2252
 Urolithiasis medicamentosa from sulfonamides 3681
 Urticaria 3347
 pigmentosa 3159
 Uterine bleeding electrocardiogram 817
 Uterus adenocarcinoma 2562
 anomalies 2580
 chorio-epithelioma 2656
 fibroids 2554 2607
 myoma, 2654
 in pregnancy 2622
 retained products of gestation in 2604
 retrodisplaced replacement of 2559
 tumor of hyaline changes in 8
 Uvular diptheria 303
- Valve rheumatic electrocardiogram 837 842
 843 845 848
 Varices esophageal x ray 1729
 Varicocele bilateral 2131
 Varicocelelectomy 2933
 Varicose ulcer 3087
 veins 3010 3042 3043
 injection treatment 3042
 Perthes test for 3040
 saphenous vein ligation for 3042
 Trendelenburg test for 3039
 Variciform syphilid 3260
 Vein retinal obstruction 1589
 thrombosis 1588
 saphenous ligation of 3043
 varicose See *Varicose veins*
 Vena cava, thrombus in 12
 Venereal diseases. See *Chancroid Lympho-
 pathia venereum Granuloma inguinale Kera-
 tosis blennorrhagica Syphilis etc*
 Venous pressure determination technique 789
 Ventricles of brain defects x ray 1424 1425
 left aneurysm of x ray 797
 Ventriculograms 1403
 Vernal conjunctivitis 1530
 grass geographical distribution 560
 Vertebral sacralization 2829
 Vertebral column anatomy of 3370
 Venal calculi radiopacity of 2318
 x ray 2318
 Vesicular lesions 2289
 Vincent's organisms in smear 47
 Virus(es) electron microscope view of 368
 Viscera in female 3480
 in obese woman 3490 3491
 Visceroptosis 3489 3490 3491
 Vision test charts 3676
 Visual field defects for color diagram 1542
 in pituitary adenoma 1188 1189
 Vitamin A deficiency 3236
 follicular hyperkeratosis of 618
 B deficiency 3236 3237
 edema in 618
 oral signs 1674
 signs 624
 Vitamin C deficiency gingivitis of 628
 D deficiency rickets in 618
 A deficiency jaundice in 618
 Vocal cord tuberculosis 2162
 Volvulus of sigmoid x ray 1876
 Von Recklinghausen's disease 1414 3261
 Vulva chancres of 335 3279
 gumma of 338 3280
 Vulvitis mycotic 2392
 Vulvovaginitis senile 2597
 trichomonal 2596
- Watking posture 3492
 Walton manipulation 3098
 Water hemp geographic distribution 560
 Watson-Jones reduction 3010
 Wearing apparel dermatitis 550
 Weeds geographic distribution of 560
 Weil's disease eye in 339
 Wharton's duct calculus in x ray 1711
 Wheals 3347
 Whipworm eggs in stool 3731
 White blood cells 1037 1039
 counts 3696 3697 3791 3792 3793

INDEX TO THE PROGRESS VOLUME

- Abortion habitual, 4354
- Abscess, liver amoebic treatment, 4166
- Acclimatization fever 4312
- Acetamidobenzaldehyde See *Thiosemicarbazones*
- Acetarsone 4182 4252 4592
- Acetone galatest, 4364
- Acetylarsan, 428
- Acid phosphatase elevated in malignancy 4432
- Act-Jel, 4592
- Acne 4193
 - vaccine, 4205
- Acridavine 4595
 - as urinary antiseptic 4626
- Acromegaly androgen in, 4193
- ACS 4 26
 - in cancer therapy 4433
- ACTIL, 4145 4146
 - in bronchial asthma 4271
 - in cancer therapy 4133 4135
 - dosage 4146
 - in Hodgkin's disease 4265
 - indications 4157
 - in leukemia, 4262 4265
 - in psoriasis, 4483
 - in rheumatic fever 4500
 - specific substitution therapy 4147
 - therapeutics, 4155 4156
 - in tuberculosis, 4607
- Actinomycosis 4141
 - vaccine 4141 4205
- Adanon See *Mahadone*
- Addison's crisis adrenal cortical extract in 4144 4160
 - desoxycorticosterone in 4144 4160
 - treatment, 4159
- Addison's disease 4159
- Ad poas dolorosa 4316
- Adiposogenital syndrome 4316
- Adrenal cortex tumors, 4318
 - glucosuria in, 4107
- Adrenal cortical extracts 4145 4144
 - list of preparations 4144
 - therapy effects of 4151
- Adrenal cortical hormones therapeutics 4155
- Adrenal medulla neoplasms of 4313
 - benodaine test in, 4420
- Adrenalin, 4158
 - as muscle relaxant 4419
- Adrenergics 4158
 - in allergy 4180
 - with antihistamines 4153
 - in common cold, 4295
- Adrenergics as muscle relaxants 4419
 - pharmacology and therapeutics 4158
 - in serum allergy 4519
- Adrenocortical deficiency 4150
 - virilism 4318
- Aerobacter aerogenes infections, 4161
- Aerosol pyrethrum bomb 43 6
 - penicillin evaluation 4452
- Aerosporin, 4162 4201
- African sleeping sickness, 4504 See also *Trypanosomiasis*
- Aigue 4392
- Alastrim, 4523
- Albumin blood fraction 4 59
- All-utest, 4582
- Alcohol for infusion 4239
 - in malignancy 4457
- Alcoholism adrenergics in, 4158
 - antabac in, procedure 4193
- Aldarsone See *Phenarsone*
- Alippo bod, 4535
- Algyn, 4544
- Aldase, 4539
- Alimentary desensitization, 4320
- Alkaligenes fecalis infection, 4163
- Allaptonuria 4623
- Allantoin 4592
- Allergen free cosmetics 4297
- Allergens, list of 4164
- Allergosil 4 12
- Allergic hypersensitivity 4163
 - adrenal cortical hormones in 4181
 - adrenergics in 4180
 - antihistamines in 4181
 - bacterial allergen vs bacterial inflammation, 4155
 - bacterial general treatment, 4249
 - collagen diseases due to 4291
 - course 4173
 - desensitization in 4180
 - procedures 4190
 - diagnosis, 4172
 - drugs and antitoxins 4136
 - food, 4329
 - histamine-type 4166 See also *Histamine-type hypersensitivity*
 - iodides and 4177
 - palliation, adrenal cortical extracts, 4161
 - adrenergics 4180
 - antihistamines 4181
 - penicillin and, 4457
 - prevention 4458
 - physical, 4165
 - pollen, 4477 See also *Pollinosis*

INDEX TO THE PROGRESS VOLUME

- Abortion habitual, 4334
 Abscess liver amebic treatment 4186
 Acclimatization fever 431
 T Acetamidobenzaldehyde See *Thiosemicarbazones*
 Acetarsone 4183 4232 4392
 Acetone galate, 4334
 Acetylarsan 4234
 Acid phosphatase elevated in malignancy 4432
 Act-Jel, 4392
 Acne 4193
 vaccine 4203
 Acridavine 4395
 as urinary antiseptic 4626
 Adromegaly androgen in 4103
 ACS 4226
 in cancer therapy 4433
 ACTH 4143 4146
 in bronchial asthma 4271
 in cancer therapy 4433 4133
 dosage 4146
 in Hodgkin's disease 4265
 indications 4157
 in leukemia 4269 4265
 in psoriasis 4483
 in rheumatic fever 4300
 specific substitution therapy 4147
 therapeutics, 415 4156
 in tuberculosis 4607
 Actinomycosis, 4141
 vaccine 4141 4203
 Adanon. See *Methadone*
 Addison's crisis adrenal cortical extract in 4144 4160
 desoxycorticosterone in 4144 4160
 treatment, 4159
 Addison's disease 4159
 Adiposa dolorosa 4316
 Adiposogenital syndrome 4316
 Adrenal cortex tumors 4318
 glucosuria in, 4107
 Adrenal cortical extracts 4143 4144
 list of preparations 4144
 therapy effects of 4151
 Adrenal cortical hormones therapeutics 4155
 Adrenal medulla neoplasms of 4318
 benodanone test in, 4420
 Adrenalin, 4153
 as muscle relaxant 4419
 Adrenergens 4158
 in allergy 4180
 with antihistamines 4158
 in common cold 4325
 Adrenergens as muscle relaxants 4419
 pharmacology and therapeutics 4158
 in serum allergy 4319
 Adrenocortical deficiency 4159
 virilism 4318
 Aerobacter aerogenes infections 4161
 Aerosol pyrethrum bomb 4376
 penicillin evaluation 4152
 Aerosporin 4162 4201
 African sleeping sickness 4394 See also *Trypanosomiasis*
 ague 4394
 Alastrum 4523
 Albumin blood fraction 4238
 Albutest 4382
 Alcohol for infusion 4239
 in malignancy 4437
 Alcoholism adrenergens in, 4158
 antabus in, procedure 4195
 Aldarsone See *Phenarsone*
 Aleppo boil, 4383
 Alglyn 4344
 Aldase 4339
 Alimentary desensitization 4329
 Alkaligenes fecalis infection 4163
 Alkaptonuria 4628
 Allantoin 4392
 Allergen free cosmetics 4207
 Allergens list of 4161
 Allergosil 4212
 Allergic hypersensitivity 4163
 adrenal cortical hormones in 4181
 adrenergens in 4180
 antihistamines in 4181
 bacterial allergen vs bacterial inflammation 4135
 bacterial general treatment 4410
 collagen diseases due to 4491
 course 4173
 desensitization in 4180
 procedures 4190
 diagnosis 4172
 drugs and antibiotics 4136
 food 4329
 histamine-type 4166 See also *Histamine-type hypersensitivity*
 iodides and 4177
 palliation adrenal cortical extracts 4181
 adrenergens 4180
 antihistamines 4181
 penicillin and 4457
 prevention 4158
 physical 4165
 pollen 4477 See also *Pollinosis*

- Allergic hypersensitivity prognosis 4174
 psychogenic 4181
 psychotherapy 4180
 solicylates and 4178
 serum 4310
 sulfonamides and 4170 4542
 terminology 4164
 therapeutic implications 4136 4138
 treatment antihistamines in 4176 4181
 elimination of sensitizing agents 4176
 general principles 4176
 palliation by adrenergics 4180
 tuberculin type 4168 See also *Tuberculin type hypersensitivity*
 Allergy 4163 See also *Allergic Hypersensitivity*
 Alpha lobeline 4188
 Aludrine See *Isoniazid*
 Aluminum acetate 4331
 hydroxide gel 4344
 phosphate gel 4344
 Alimor 4344
 Amebacides 4182
 Amebiasis 4188
 extra intestinal 4186
 prophylaxis 4185
 Amebic dysentery 4183
 Amenorrhea secondary estrogens in 4323
 American leishmaniasis 4385
 Mountain fever 4205
 Amidone 4416
 Amigen 4235 4239
 Amino acids 4234
 daily requirements 4234
 indications 4234
 Ammonia 4235
 Aminophyllin in bronchial asthma 4270
 in hypertension 4360
 Aminopterin in acute leukemia 4263 4433
 Aminosol 4239
 Ammoniated mercury 4331
 Ammonium mandelate 4400
 Amphetamine as analgesic 4188
 in barbiturate poisoning 4234
 as muscle relaxant 4310
 AN 148 4416
 Analeptics 4187
 Analgesics 4416
 addition comparison of 4417
 efficacy comparison 4417
 Anaphylactic shock 4187
 Anaphylaxis adrenergics in 4188
 Anayodin 4443
 Ancylostomiasis 4023
 Androgens 4192
 androgenous effects of 4193
 therapy in cancer evaluation 4433
 in female indications 4194
 in male 4193
 Anemia miners 4023
 Angitis visceral 4311 4638
 Angina pectoris androgen in 4193
 Angioneurotic edema 4510 4630
 Angular conjunctivitis 4414
 Ant control 4377
 Antabus 4195
 Antacids gastric 4313 4344
 Anterior pituitary adrenocorticotrophic hormone 4143 See also *ACTH*
 Anthallan 4212
 Anthelmintics 4197
 Anthiolamine 4223
 in filariasis 4328
 Anthrax 4108
 antibacterial serum 4261
 Antibiotics 4200
 bacterial sensitivity to 4133
 bacterial spectrum 4250
 blood coagulation increase due to 4130
 hypersensitivity 4136
 prevention 4139
 prophylaxis by in bacterial endocarditis 4313
 in surgical procedures 4201
 in venereal diseases 4350
 in staphylococcal infections choice of 4330
 Anti brucellosis serum 4264
 Anticarcinogenic therapy 4432
 Anticoagulants 4200
 in phlebotrombosis prophylaxis 4376
 preparations 4202
 Antidysenteric antibacterial serum 4201
 Anti-erysipeloid serum 4201
 Antigens 4204
 desensitization by evaluation 4180
 list of 4205
 Antihemophilic globulin 4250
 Antihistamines 4210
 administration routes of 4210
 in allergy 4181
 in bronchial asthma 4270
 in common cold 4295
 concurrent administration with anti-infective agents 4139
 in erythema multiforme 4324
 in lupus erythematosus acute 4388
 in lupus vulgaris 4390
 in meningococcal infections 4409
 as muscle relaxants 4419
 non-specific indications 4218
 with penicillin 4458
 in peri arteritis nodosa 4401
 in pityriasis rosea 4465
 preparations 4212
 in prophylaxis of tuberculin type hypersensitivity 4218
 in rheumatic fever 4406 4408
 as sedatives 4318
 in serum allergy 4310
 in streptococcal sore throat, 4338

- Antihistamines therapeutics** 4216
 toxicology 4214
 in tuberculosis, 4607 4613
 in vernal conjunctivitis, 4632
Anti-infective agents, 4219 See also under
 names of specific agents
 bacterial spectrum comparison 4250
 hypersensitivity prevention guiding prin-
 ciples 4133 4139
Anti-influenza serum 4261
Antimalarials list of 4397
Antimeningococcus antibacterial serum 4251
Antimoniais, 4292
 in American leishmaniasis 4585
 in filariasis 4328
 indications, 4223 4224
 in leishmaniasis 4393
 preparation 4223
 in rhinosporidiosis 4305
 in schistosomiasis, 4318
 toxicology 4296
Antimony poisoning BAL in 4252
 and potassium tartrate 4223
 and sodium tartrate 4223
 sodium thioglycollate 4224
 thioglycollamide 4224
Anti-pertussis rabbit serum 4262
Anti-pneumococcus serum 4261
Antireticular cytotoxic serum 42 6
 in cancer therapy 4133
Anti-Rocky Mountain spotted fever serum
 4262
Antiseptics urinary See *Urinary antiseptics*
Antistine 4212
Antitherapeutic factors 4133
Antitoxic serums, 4238
Anti-tularemia serum 4262
Anti-typhus serum 4262
Antivenom crotalus, 4260
 Iatrodictus mactans 4267 4260
 in snake bite 4266
Antrycide 4227 4395
Antryptol See *Su am n*
Antu poisoning due to 4375
Aphthous fever 4329
Arachnidism 4298
Aralen See *Chloroquine*
Arsenic acid 4231
 poisoning BAL in 4.33 4251
 trioxide 4231
Arsenicals 4230
 in chronic lymphatic leukemia 4263
 in frambesia 4330
 in fusospirochetosis 4339
 list of 4231
 in syphilis 4559
 as trichomonocides 459
p-Arsenosophe ylbutyric acid 4.33 4595
 in trypanosomiasis 4595
Arsenoxide 4231
Arsphenamine 4231
Artane therapeutics, 4419
Arthritis, rheumatoid 4507
 vaccines, 4205
Artificial feeding 4234
Artusone 4161
 in Hodgkin's disease 4265
 in lupus erythematosus acute 4359
 in peri-arthritis nodosa 4461
 in rheumatic fever 4500
 in rheumatoid arthritis 4504
 in verrucous endocarditis 4513
Ascariasis 4 40
Asiatic cholera 4284
Aspergillosis, 4241
Aspidium 4197
Aspogen, 4544
Asthma, bronchial 4270
 adrenergics in 4158
 antihistamines in, 4217
 orthoxime in 4442
Atabrine 4197 4397 4495
Athlete's foot, 4335
Atoril, 4232 4233 4395
Atropine as muscle relaxant, 4419
Atypical pneumonia See *Virus pneumoniae*
Atypical verrucous endocarditis, 4511
Au 193 in cancer therapy 4435
Aureomycin, 4241
 in *Aerobacter aerogenes* infections, 4161
 allergy to 4246
 in amebiasis 4162 4185
 available products 4241
 in bacterial endocarditis, 4315
 bacterial spectrum 424 4250
 in *Bacteroides* infection 4 30
 blood coagulation increase 4159 4 46
 in brucellosis 4273
 in chancreoid, 4277
 as chloramphenicol, 4247
 in cholera, 4285 4286
 in colon bacillus infection 4292
 combined antibiotic therapy 4 47
 in common cold 4296
 in epidemic keratoconjunctivitis 4319
 in erythema multiforme 4324
 in fusospirochetosis, 4339
 in gonorrhea 4352
 in granuloma inguinale 4353
 in herpes zoster 4356
 in inclusion conjunctivitis, 4368
 in infectious mononucleosis 4369
 in infectious polyneuritis 4370
 in influenza 4371
 in klebsiella, 4381
 in Koch Weeks conjunctivitis, 4382
 in lymphophtia venerea 4392
 in meningococcal infections 4410
 in Morax-Axenfeld conjunctivitis 4414
 in mumps 4418

- Allergic hypersensitivity prognosis 4174
 psychogenic 4184
 psychotherapy 4180
 salicylates and 4178
 serum 4519
 sulfonamides and 4179 4542
 terminology 4161
 therapeutic implications 4196 4198
 treatment, antihistamines in 4176 4181
 elimination of sensitizing agents 4176
 general principles 4175
 palliation by adrenergics 4180
 tuberculin type 4168 See also *Tuberculin type hypersensitivity*
 Allergy 4163 See also *Allergic Hypersensitivity*
 Alpha lobeline 4188
 Aludrine See *Isoniazid*
 Aluminum acetate 4331
 hydroxide gel 4344
 phosphate gel 4344
 Alzinor 4344
 Amebiasis 4182
 extra intestinal 4186
 prophylaxis 4185
 Amebic dysentery 4183
 Amenorrhea secondary estrogens in 4305
 American leishmaniasis 4385
 Mountain fever 4293
 Amidone 4416
 Amigen 4235 4239
 Amino acids 4234
 daily requirements 4234
 indications 4234
 Aminoids 4235
 Aminophyllin in bronchial asthma 4270
 in hypertension 4360
 Aminopterin in acute leukemia 4263 4433
 Aminosol 4239
 Ammoniated mercury 4331
 Ammonium mandelate 4400
 Amphetamine as analgetic 4188
 in barbiturate poisoning 4054
 as muscle relaxant 4319
 AN 149 4416
 Analeptics 4187
 Analgesics 4416
 addition comparison of 4417
 efficiency comparison 4417
 Anaphylactic shock 4187
 Anaphylaxis adrenergics in 4158
 Anayodin 4443
 Ancylostomiasis 4623
 Androgens 4190
 androgenous effects of 4198
 therapy in cancer evaluation 4433
 in female indications 4194
 in male 4193
 Anemia miners 4023
 Angulus visceral 4311 4638
 Angina pectoris androgen in 4193
 Angioneurotic edema 4519 4630
 Angular conjunctivitis 4414
 Ant control 4377
 Antabus 4195
 Antacids gastric 4343 4344
 Anterior pituitary adrenocorticotrophic hormone 4143 See also *ACTH*
 Anthallan 4212
 Anthelmintics 4197
 Anthelmintic 4023
 in filariasis 4328
 Anthrax 4198
 antibacterial serum 4261
 antibiotics 4200
 bacterial fastness to 4133
 bacterial spectrum 4230
 blood coagulation increase due to 4139
 hypersensitivity 4136
 prevention 4138
 prophylaxis by in bacterial endocarditis 4313
 in surgical procedures 4291
 in venereal diseases 4350
 in staphylococcal infections choice of 4330
 Anti brucellosis serum 4260
 Anticarcinogenic therapy 4432
 Anticoagulants 4200
 in phlebotrombosis prophylaxis 4376
 preparations 4202
 Antidysenteric antibacterial serum 4261
 Anti-erysipeloid serum 4261
 Antigens 4204
 desensitization by evaluation 4180
 list of 4205
 Antihemophilic globulin 4259
 Antihistamines 4210
 administration routes of 4216
 in allergy 4181
 in bronchial asthma 4270
 in common cold 4295
 concurrent administration with anti-infective agents 4139
 in erythema multiforme 4324
 in lupus erythematosus acute 4358
 in lupus vulgaris 4390
 in meningococcal infections 4409
 as muscle relaxants 4419
 non specific indications 4218
 with penicillin 4458
 in peritonitis nodosa 4461
 in pityriasis rosea 4465
 preparations 4212
 in prophylaxis of tuberculin type hypersensitivity 4218
 in rheumatic fever 4496 4498
 as sedatives 4518
 in serum allergy 4519
 in streptococcal sore throat, 4538

- Bite snake 4323
 spider 4223
 Black l ver 4507
 Black test, 4431
 Black widow bite 4223
 Blackwater fever 4392
 Bladder tumors, 4277
 Blastomycin 4292
 Blastomycosis, 4245
 Blood, 4457
 and blood forming organs, neoplasms of 4262
 chemistry in malignancy 445
 coagulation, increased, with antibiotics 4139
 tests, 4522
 homologous, 4252 453
 occult, test for 4354
 red cells, resuspended, 4409
 Body temperature variations, 4411
 Boeck's disease, 4512
 Bolen test, technic, 4429
 Bone marrow biopsy 4431
 tumors, 4322
 Borchardt test, 4403
 Boric acid, 4531
 Borate lotion in pediculosis, 4446 4447
 Bornholm's disease 4320
 Botulism, 4266
 antitoxin, 4260
 prophylaxis, 4267
 Bouquet fever 4293
 Boutonneuse fever 4509
 Bowen's disease, 4560
 Brain tumors, 4438
 Breakbone fever 4223
 Breast, female, neoplasms of 43 6
 male, neoplasms of 4322
 British Anti-Lewisite 451
 Bronchi, neoplasms of, 4433
 Bronchial asthma, 4270
 Bronchodilators, 4153
 Bronchomoniliasis, 4413
 Bronchospasm, isuprel in, 4380
 Brucella vaccine, 4205
 Brucellergen skin test, 4272
 Brucellosis, 4271
 diagnosis, 4272
 immune serum, 4260
 prophylaxis, 4271
 skin test, 4272
 Bubo, climatic, 4391
 Bubonic plague, 4466
 Bull fever 4507
 Bunyamwera virus, 4633
 Burrow's solution, 4331
 Busse-Busch's disease, 4255
 Butabarbital sodium 4518
 Butisol, 4518
 Button biopsy 4430
 Bwamba fever 4633
 CACONATE of soda, 4230 4231
 Calergone 4420
 Calciferol in erythema induratum 4522
 in lupus erythematosus, acute 4529
 in tuberculosis, 4507
 Calornia (Hammon-Reeves) virus, 4633
 Camellate 4500
 Camoquin, 4274 4527
 Cancer detection by the general practitioner 4427
 in office laboratory 4429
 early signs of 4426
 of skin, 4560
 therapy by practitioner 443
 specialist, 4435
 Canicola fever 4275
 Canning of food, 4267
 Caprokol, 4546
 Caprylic acid, 4531
 Carbamphen, 4420
 Carbamyl in tuberculosis 4607
 Carbarsone 4192, 425 4522
 in Trichomonas enterocolitis, 4321
 Carbon t trichloride 4193
 Carcinoma. See also Cancer
 operable, management, 4437
 palliative therapy 4436
 Carfusin, 4531
 Carnamide 4275
 Carriers of amebiasis, treatment, 4183
 of meningococci, treatment, 4408
 of typhoid fever treatment, 42 1
 Carnon's disease 4632
 Casec, 4253
 Casein hydrolysate 4252
 Castellani paint, 453
 Castration in malignancy 4432
 Catarrhal jaundice, 4635
 Catarrhal vaccine 4302
 C C 914, 4231 4233
 C C 1022 4231 4233
 Cepryn, 453 4522
 Cerebral thrombosis, 4551
 stellate ganglion block in, 4532
 Cervix uteri, sponge biopsy technic, 4430
 tumors of 4327
 Cestodiasis, 4307 4361
 Chagas disease. See Trypanosomiasis
 Chancre, soft, 4276
 Chancroid, 4278
 prophylaxis, 4276
 Chaulmoogra oil, evaluation, 4557
 Chemoprophylaxis, 4362
 of infectious diseases, 4367
 of meningococcal infections, 4408
 in pertussis, 4463
 of venereal diseases 4557
 Chenopodium oil, 4193 4278
 in ascariasis, 4241
 Chickenpox, 4278

- Aureomycin ointment** 4242 4331
 oral dosage 4242
 in ornithosis 4442
 vs penicillin 4457
 in pertussis 4464
 pharmacology 4242
 in polymyelitis 4473 4474
 products 4241
 in Q fever 4485
 in rabies 4490
 in rat bite fever 4491
 in rheumat fever 4498
 in rickettsialpox 4506
 in Rocky Mountain spotted fever 4508
 in staphylococcal infections 4531
 in streptococcal infections 4536
 in syphilis 4559
 vs terramycin 4247
 therapeutics 4243
 toxicology 4245
 in trachoma 4590
 in *Trichomonas enterocolitis* 4591
 in tsutsugamushi fever 4596
 in tuberculosis 4607
 in tularemia 4619
 in typhus fever 4622
 as urinary antiseptic 4626
 in virus hepatitis 4636
 in virus pneumonitis 4637
 in yellow fever 4639
Aurothioglycose 4347 4504
Australian mouse pneumonitis 4441
 X disease 4810
Avian pneumo-encephalitis 4439
 pseudo-plague 4439
Ayer biopsy 4480
- BACMAYN** 4746
Bacillary dysentery 4520
 immune serum 4260
Bacillomycin 4247
 in histoplasmosis 4357
Bacitracin 4182 4247 4351
 aerosol in common cold 4995
 local uses of 4248
 vs penicillin 4248 4456
 in staphylococcal infections 4530
 in streptococcal infections 4535
Bacterial allergy treatment general 4249
 antigen desensitization by evaluation 4180
 hypersensitivity to 4134
 endocarditis 4313
 fastness 4133 4134
 filtrates in cancer therapy evaluation 4433
 hypersensitivity 4134 See also *Hyper sensitivity reactions*
 resistance 4134
Bactericides 4249
Bacterioides funduliformis infection 4740
- Bacteriophage** 4250
BAL 4251
 toxicology 4252
Balanitis 4252
Bang's disease 4271
Banked blood 4258
Barbiturate poisoning 4253
Barbiturates 4518
Bartonellosis 4632
Nasal temperature variations 4411
Basophilism 4316
Bayer 205 See *Surgamin*
Bayer 561 See *Solustiboson*
Bayer 693 See *Ethylstilbamine*
Bayer 7602 4593
Bazin's disease 4322
BCG antigen 4203
 vaccination 4602
 evaluation 4604 4605
 mass 4614
 results 4603
Bedbug control 4377
Behcet's disease 4303
Belladonna 4119
Benadryl 4212 See also *Antihistamines*
 in bronchial asthma 4270
 vs pyribenzamine 4215
 in rheumatic fever 4496
 schedule for administration 4216
Benodaine 4318 4120
 diagnostic test 4420
Benylate 4513
Benzazoline 440
Benzedrine 4158 4420
Benzene hexachloride 4374 4376
 as insecticide 4376
Benzestrol 4325
Benzoic acid 4331
 in coccidioidomycosis 4220
Benzothiazole in tuberculosis 4607
Benzyl benzoate 4446 4513
 in scabies 4515
Besnier Boeck Schaumann disease 4512
Beta naphthol benzoate 4197 4446 4513
Bial test 4403
Bilharzias 4516
Biopsy button 4130
 exfoliative 4430
 marrow 4431
 sponge 4430
 surface 4430
 surgical 4431
Bismarsen 4231
Bismuth 4255
 arsphenamine 4231
 poisoning BAL in 4252
 subcarbonate 4182
 subsalicylate 4253
Bismuth in lupus erythematosus chronic 4389

- Cortone 4145 See also *Cortisone*
 dosage and administration, 4155
 indications 4157
 specific substitution therapy 4146
 therapeutics 4155
 Cosmetics allergen free 4207
 Cotton pox, 4323
 Cough, drugs for 4416
 Cowpox 4631
 Coxsackie (Dalldorf) virus disease 4634
 Creamalin 4344
 Cremonaxidine 4543
 Cresatin 433
 Cresol, 4513
 Crotalus antitoxin in snake bite 452a
 Cryptococcosis 4253 4587
 Crystoids 4356
 Cuprex 4446
 Curare 4421
 Cushing's syndrome 4316
 Cytodiagnosis of malignancy 4430 4437

 DALYDE, 4332
 Danish ointment, 4332 4513
 Dandy fever 4293
 Daukalin, 4385
 DDT 4297
 fastness 4133
 as pediculicide 4446
 toxicity 4298
 Decapryn 4212
 Deer fly fever See *Tularemia*
 Delcos 4235
 Delphinium 4446
 Delvinal, 4518
 Demerol, see *Mepersidine*
 Dengue 4203
 Depo-heparin sodium 4200 4201
 Dercum's disease 4316
 Dermatitis contact, 4297
 herpetiformis 4299
 medicamentosa, 4306
 venenata 4297
 verrucous 4287
 Dermatomyositis, 4299
 Dermatophytosis, cutaneous 4333
 Dengue See *Rabies*
 Derris 4376
 Desener 4332
 Desensitization in food allergy 4329
 histamine 4210
 procedures 4190
 Desert rheumatism 4289
 Desoxycorticosterone 4144
 in Addison's crisis, 4134
 in Addison's disease 4160
 Desoxyn hydrochloride 4158 4188
 Devegan 4592
 Devil's gripe 43 0
 Dextran, 4239
 Dextrose 4239
 Diabetes insipiens, 4106
 mellitus glycosuria in 4407
 renal 4106
 Diammon 4416
 Diasone 4300
 in actinomycosis 4143
 in leprosy 4386
 Diatrin hydrochloride 4212
 Dibenamine 4421
 Dichlorophenarsine 4231
 Dick test evaluation 4515
 Dicodid See *Dihydrocodeinone bitartrate*
 Dicumarol 4 00
 vs Heparin 4201
 therapeutics 4203
 Diethylstilbestrol in atrophic vaginitis 4325
 in mumps, 4418
 Dietotherapy in hypertension 4361
 Digestive system neoplasms of 4200
 Dihydrocodeinone bitartrate 4415 4416
 Dihydroergotamine 4421
 Dihydrostreptomycin bacterial spectrum 4230
 in tuberculosis evaluation 4608
 as urinary antiseptic, 4626
 Dihydroxyaluminum amino acetate 4344
 Dinbarital, 4518
 Dinestrol, 4 25
 Diidoquin 4180 4443
 in amebiasis, 4185
 prophylaxis 4185
 in balantidiasis 4232
 Dipterin See *Teropterin*
 Diphenan 4198
 in oxyuriasis 4444
 Diphtheria 4302
 antitoxin 4361
 immunization, 4363
 prophylaxis 4302
 toxoids choice of 4303
 vaccines 4206
 Diamin 4231
 in leishmaniasis 4386
 Distomiasis hemic, 4516
 Diuretics, 4305
 Dora See *Desoxycorticosterone*
 Dolantin, 4416
 Dolophine See *Methadone*
 Dracontiasis See *Filaria*
 Dramamine 4212
 Drisdol in lupus vulgaris 4590
 Drug allergy 4136 4306
 dermatitis, 4306
 Ducey vaccine 4206
 Dühring's disease 4299
 Dumm-dumm fever 4385
 Dwarfism androgens in, 4193
 Dysentery bacillary See *Shigella*
 serum 4261

- Chigger control 4377
 Childhood immunization 4363
 Chinese liver fluke infestation 4288
 Chinofoin 4182 4448
 Chloral hydrate 4518
 Chloramphenicol 4279
 in *Aerobacter aerogenes* infections 4161
 in amebiasis 4182
 as aureomycin 4217
 in bacterial endocarditis 4315
 bacterial spectrum 4250
 in brucellosis 4273
 in colon bacillus infections 4292
 dosage 4280
 in granuloma inguinale 4355
 in herpes simplex 4355
 in herpes zoster 4355
 in infectious polyneuritis 4370
 in influenza 4371
 in klebsiellosis 4381
 in lymphopathia venereum 4392
 in ornithosis 4442
 in pertussis 4464
 in poliomyelitis 4474
 in *Proteus vulgaris* infections 4482
 in Q fever 4485
 in rabies 4490
 in rheumatic fever 4498
 in rickettsialpox 4506
 in Rocky Mountain spotted fever 4507
 in shigellosis 4520
 in staphylococcal infections 4531
 in streptococcal infections 4536
 in syphilis 4559
 therapeutics 4248
 in tuberculosis 4607
 in tularemia 4619
 in typhoid fever 4620
 in typhus fever 4622
 as urinary antiseptic 4626
 in virus pneumonitis 4637
 in yellow fever 4639
 Chlordane 4374 4376
 Chloresium 4282
 Chlorguanide hydrochloride 4281 4397
 in falciparum malaria 4281
 prophylaxis 4396
 in vivax malaria 4282
 Chloromycetin 4279 See also *Chloramphenicol*
 Chlorophyll 4282
 Chloroquine 4283 4397
 in amebiasis 4185 4283
 prophylaxis 4185
 in malaria 4283 4398
 vivax prophylaxis 4397
 Chlorosis tropical 4623
 Chlor trimetron maleate 4212
 Choix fever 4507
 Cholera 4284
 prophylaxis 4284
 Cholera vaccine 4205
 Choline chloride 4235
 dihydrogen citrate 4235
 Cholmergens 4421
 Chondrodendron tomentosum extract, 4421
 Chordotomy in inoperable malignancy 4196
 Chorea 4287
 Choriomeningitis lymphocytic 4390
 Chromblastomycosis 4287
 Chrysarobin 4332
 Chrysotherapy See *Gold*
 Circulin 4288 4332
 Citrated human blood 4258
 Climacteric male 4193
 Climatic bubo 4301
 Climatotherapy in rheumatoid fever 4499
 Climtest for urine sugar 4335
 Clonorchiasis 4288
 Clorarsen 4231
 Clostridiosis 4341
 Coagulability tests 4572
 Coagulation time technic 4572
 Coccidioid granuloma 4289
 Coccidioidin 4205
 test, 4299
 vaccine in coccidioidomycosis 4290
 Coccidioidomycosis 4289
 Cochin China diarrhea 4339
 Cold common See *Common cold*
 *Cold vaccine 4206
 Coli vaccine 4206
 Collagen diseases 4290
 Colon bacillus infections 4291
 Colon neoplasms of 4301
 Colorado tick fever 4295
 Common cold 4294
 Compakt in snake bite 4325
 Compound A 4144
 Compound E 4144 See also *Cortons*
 Compound F 4144
 Congenital abnormalities due to rubella 4509
 Conjunctivitis epidemic infectious 4319
 inclusion 4368
 Koch Weeks 4382
 Morax Axenfeld 4414
 vernal 4632
 Contact atopy 4297
 Conteben in tuberculosis 4607
 Coramine See *Nikethamide*
 Coronary occlusion 4383
 Cortisone 4144 See also *Cortons*
 in allergic hypersensitivity 4181
 in atypical verrucous endocarditis 4312
 in Hodgkin's disease 4265
 in lupus erythematosus 4389
 in periarthritis nodosa 4461
 in psoriasis 4483
 in rheumatic fever 4500
 in tuberculosis 4607

- Folic acid conjugates and analogs See *Ter*
opterin
- Food allergy 4329
 poisoning 4311
- Foot and mouth disease 4329
- Formin 4413
- Fort Bragg fever 4631
- Fournieu 270 4233
- Fournieu 302 See *Suramin*
- Fowler's solution 4231
 in chronic lymphatic leukemia 4263
- Frambesia 4330
 STB in 4333
- Frei antigen 4207
 text, 4391
- Friedlander bacillus infections 4380
 vaccine 4207
- Frigidity androgens in, 4194
- Fröehlich's syndrome 4316
- Fructosuria 4104
- Fusidin 4224
- Fumigacin 4331
- Fungicides for topical use list of 4331
- Fungus infections 4333
- Furunculosis vaccine 4207
- Fusospirochetosis 4338
- GALACTOSURIA** 4104
- Galatest for urine sugar 4383
- Gamma globulin blood fraction 42 9 4330
 4340
 in homologous serum jaundice 43 9
 in infectious hepatitis 4369
 in measles prophylaxis 4100
 in mumps, 4118
 in virus hepatitis prophylaxis 4635
- Gantrisin 4340 4315
 as urinary antiseptic, 4626
- Garapata disease 4191
- Garlicin 4340
- Gas gangrene 4341
 antitoxins 4261 4343
- Gastric antacids 4343 4344
- Gastro-enteritis epidem = See *Virus dys-*
entery
- Gel aluminum hydroxide 4344
- Genitals female neoplasms of 4327
 male neoplasms of 4309
- Gentian violet 4199 4315
 in geotrichosis 4315
 in moniliasis 4114
 in oxyuriasis 4444
 in strongyloidiasis 4339
 for topical use 4332
 in torulosis 4387
- Geotrichosis 4315
- German measles See *Rubella*
- Germanin See *Suramin*
- Guardiasis 4315
- Gilchrist's disease 4255
- Giraffe fever 4298
- Gladstone sponge biopsy 4130
- Glanders 4316
- Glandular fever 4369
- Globulin antihemophilic 4259
 blood fraction 42 II
 immune placental extract 4259
 modified 4259
- Glycosuria 4105
 benign 4106
 hyperglycemic differential diagnosis (Table)
 4107
 non hyperglycemic differential diagnosis
 440
 test for 4383
- Gold 4346
 antidote 4349
 dosage 4319
 poisoning BAL 42 1
 radioactive 4435
 in rheumatoid arthritis evaluation 4503
 and sodium thiosulfate 4504
 sodium thiomalate 4504
 theapeutics 4347
 toxicity 4349
 in tuberculosis 4608
- Golden Age of Therapeutics, 4219
- Gonococcal infections 4349
- Gonococci sulfonamide-fast, 4133
 vaccine 4 07
- Gonorrhea penicillin in 4330
 prevention 4350
- Goodman electrogastrogram 4192
- Granuloma inguinale 4353
 paracoccidiodal, 4255
- Guanatol See *Chloroquine*
- Guillain Barre syndrome 4369
- Gynecomastia 4399
- Gynergen 41 2
- HABITUAL** abortion 4354
- Hair fungus infections of treatment 4336
- Hansen's disease 4396
- Hapamine 4211 4 12
- Haverhill fever See *Rat bite fever*
- Hay fever 4477
- Head erythromelalgia of 4 10
- Heine Medin's disease See *Poliomyelitis*
- Helminthiasis See *Distomiasis Oxyuriasis*
Teniasis and *Uncinariasis*
- Hem test 4394
- Hemiplegic therapy and rehabilitation 4593
- Hemachromatosis glycosuria with 4407
- Hemophilia antihemophilic globulin 4239
- Hemophilus influenzae infections 4370
- Hemostatic 4259
- Heparin-depo sodium 4 02
- Heparin Pitkin 4202

- Dysentery thalamyd in 4570
 vaccine 4206
 virus 4634
 Dysmenorrhea androgens in 4194
 Dysovulation androgens in 4191

ECHINOCOCCOSIS 4307
 Ectodermosis erosiva pluriorificialis 4323
 Eczema 4297
 Edema hypercortinism causing 4154
 Egyptian chlorosis 4623
 Elamine 4239
 Electrodiagnosis in malignancy 4432
 Electrogastrography 4431
 Elephantiasis 4327
 Embolectomy 4581
 Emetine 4198
 in amebiasis 4182 4186
 Enbin 4515
 Encephalitis epidemic 4308
 equine 4309
 Japanese B 4310
 lethargica 4308
 postinfectious 4307
 postvaccinal prophylaxis 4308
 Russian tick borne 4510
 St Louis 4310
 vaccine 4206
 dosage 4309
 Venezuelan equine 4632
 Encephalomyelitis vaccine equine 4006
 Encephalomyeloradiculitis 4369
 Encephalomyocarditis 4311
 Encephalopathy postvaccinal prevention
 4631
 Endocarditis atypical verrucous 4311
 subacute bacterial 4313
 Endocrines neoplasms of 4316
 Endometriosis androgens in 4194
 Enterocolitis Balantidia 4252
 garlicin in 4341
 Giardia lamblia 4345
 Trichomonas 4591
 Entoral 4206
 Enzootic hepatitis 4634
 Eosinopenia due to ACTH 4153
 Eosinophilic pneumonitis 4318
 Ephedrine 4158
 Epidemic encephalitis 4308
 gastroenteritis 4634
 hepatitis 4635
 keratoconjunctivitis 4319
 nausea vomiting and diarrhea 4634
 parotitis 4417
 pleurodynia 4320
 Epidermolysis bullosa 4630
 Epinephrine 4158 4421
 in rheumatoid arthritis 4156
 Epizootic eczema 4329

Equine encephalitis 4309
 Ergotamine 4421
 Erysipelas 4320
 streptococcus antitoxin 4061
 vaccine 4206
 Erysipeloid 4322
 serum 4261
 Erythema induratum 4333
 multiforme exudativum 4323
 Erythrocytes resuspended human 4059
 Erythromelalgia of head 4210
 Esophagus neoplasms of 4301
 Essamine 4035
 Esthiomene 4391
 Estrogens 4325
 in cancer therapy evaluation 4434
 Etamon in hypertension 4360
 therapeutics 4422
 Ethinyl estradiol 4325
 Ethyl carbamate *See Urethane*
 iodide inhalations in actinomycosis 4143
 Ethylstibamine 4004
 in leishmaniasis 4385
 Euquinine 4496
 Evpal 4518
 Exanthema subitum 4520
 Exanthematous fever 4069
 Exfoliative biopsy 4430
 cytology 4430

FAMINE fever 4491
 Fanconi's syndrome 4106
 Farcy 4346
 Fastness bacterial to antibiotics 4133
 Female androgen therapy in 4194
 reproductive system neoplasms of 4326
 sex hormones 4325
 Fertility period of 4412
 Fever of Conor and Bruch 4260
 dengue like 4 98
 scarlet 4515
 tick 4293
 tick bite 4587
 typhoid 4620
 typhus 4621
 yellow 4638
 Fibrin film 4259
 foam 4239
 Fibrinogen human 4259
 Filariasis 4327
 Five-day fever 4590
 van der Scheer 4293
 Flea killers 4377
 Flit 4376
 Florsquim 459
 Fluids for intravenous infusion 4233
 Flukes 4516
 Fly killers 4377
 Folic acid antagonists *See Aminopterin*

- Folic acid conjugates and analogs *See Ter optera*
- Food allergy 4329
poisoning 4511
- Foot and mouth disease 4329
- Formin 4413
- Fort Bragg fever 4634
- Fourneau 2 0 4233
- Fourneau 309 *See Suramin*
- Powder's solution 4231
in chronic lymphatic leukemia 4263
- Frambesia 4330
STB in 4533
- Fret antigen 4207
text, 4391
- Friedlander bacillus infections 4390
vaccine 4207
- Frigidity androgens in 4194
- Froelich's syndrome 4316
- Fructosuria 4104
- Fuadin 4224
- Fumigacin 4331
- Fungicides for topical use list of 4331
- Fungus infections, 4333
- Furunculosis vaccine 4207
- Fusospirochetosis 4338
- GALACTOSURIA** 4404
- Galatest for urine sugar 4383
- Gamma globulin blood fraction 4250 4339
4340
in homologous serum jaundice 4339
in infectious hepatitis 4369
in measles prophylaxis 4400
in mumps 4118
in virus hepatitis prophylaxis 4635
- Gantrisin 4340 4545
as urinary antiseptic 4626
- Garapata disease 4491
- Garlicin 4340
- Gas gangrene 4341
antitoxins 4261 4345
- Gastric antacids 4343 4344
- Gastro-enteritis epidemic *See Virus dysentery*
- Gel aluminum hydroxide 4344
- Genital female neoplasms of 4397
male neoplasms of 4399
- Gentian violet 4108 4345
in geotrichosis 4345
in moniliasis 4114
in oxyuriasis 4444
in strongyloidiasis 4539
for topical use 4332
in torulosis 4587
- Geotrichosis 4345
- German measles *See Rubella*
- Germanin *See Suramin*
- Giardiasis 4343
- Gikhris's disease 425
- Giraffe fever 4298
- Mladstone sponge biopsy 4130
- Glanders 4346
- Glandular fever 4369
- Globulin antihemophilic 4259
blood fraction 42 0
immune placental extract 4259
modified 4259
- Glycosuria 4405
benign 4108
hyperglycemic differential diagnosis (Table)
4407
non hyperglycemic differential diagnosis
4403
test for 4383
- Gold 4346
antidote 4349
do age 4349
poisoning BAL 4251
radioactive 4135
in rheumatoid arthritis evaluation 4503
and sodium thiosulfate 4504
sodium thiomalate 4504
therapeutics 4347
toxicity 4348
in tuberculosis 4608
- Golden Age of Therapeutics 4210
- Gonococcal infections 4349
- Gonococci sulfonamide fast 4183
vaccine 4 07
- Gonorrhea penicillin in 43 0
prevention 4350
- Goodman electrogastrogram 4132
- Granuloma inguinale 4353
paracoccidial 4255
- Guanatol *See Chloroquine*
- Gullian Barre syndrome 4369
- Gynecomastia 4399
- Gyne gen 4122
- HABITUAL ABORTION** 4354
- Hair fungus infections of treatment 4396
- Hansen's disease 4386
- Ilapamine 4211 4212
- Haverhill fever *See Rat bite fever*
- Hay fever 4477
- Head erythromelalgia of 4210
- Heme Meds disease *See Polymyositis*
- Helminthiasis *See Distomans Oxyuriasis T mans and Uncinarians*
- Hematest 4384
- Hemiplegic the apy and rehabilitation 4593
- Hemochromatosis glycosuria with, 4407
- Hemophilus antihemophilic globulin 4 59
- Hemophilus influenzae infections 4370
- Hemolytic 4259
- Heparin-depo sodium 4207
- Heparin Pitkin 4 0

- Heparin in bacterial endocarditis 4314
 in coronary thrombosis 4584 4585
 as Dicumarol 4201
 in phlebothrombosis 4577
 solution 4202
 therapeutics 4203
 Hepatitis in infectious mononucleosis 4369
 virus 4635
 Herpes simplex 4355
 zoster 4355
 Herxheimer reactions due to penicillin 4459
 Heterologous blood 4253
 serum 4260
 Hetrazan 4138
 in filariasis 4328
 in trichinosis 4591
 Hexamethylenamine See *Methenamine*
 Hexestrol 4325
 Hexylbarbital 4518
 Hexylresorcinol 4199 4358
 in ascariasis 4240
 in uncinariasis 4624
 as urinary antiseptic 4626
 Hirsuties ACTH causing 4153
 Histadyl 4213
 Histadyl ephedrine in asthma 4270
 Histaminase 4211
 Histamine 4210
 antagonists See *Antihistamines*
 azoprotein 4211
 phosphate 4213
 preparations 4212
 shock 4210
 treatment 4210
 Histamine-type hypersensitivity acute 4135
 4166
 reactions 4166
 clinical syndromes 4167
 to therapeutic agents 4137
 as tuberculin type hypersensitivity 4171
 4172
 Histoplasmin 4207
 skin test 4355
 Histoplasmosis 4356
 bacillomycin in 4247
 His-Werner disease 4590
 Hodgkin's disease 4265
 Home canning 4267
 Homologous blood 4257 4258
 serum jaundice 4358
 prophylaxis 4359
 Hookworm disease 4623
 Hormone anterior pituitary adrenocortico-
 tropic 4143 See also *ACTH*
 female See *Estrogens*
 male See *Androgens*
 therapy in mumps 4415
 Huggins test evaluation 4431
 Human blood 4258
 serum 4258
 Hyaluronidase 4359
 Hycodan in pertussis 4464
 Hydase-lyophilized 4359
 Hydatid disease 4307
 Hydrilum 4213
 Hydroa aestivale 4629
 Hydrophobia See *Rabies*
 Hydrotherapy in poliomyelitis 4474
 Hypercalcemia 4389 4390
 in malignancy 4432
 Hypercortinism artificial clinical manifesta-
 tions 4150
 concept of 4147
 therapeutics 4155
 Hyperglobulinemia in malignancy 4482
 Hyperglycemia adrenocortical 4152
 in malignancy 4432
 Hypernatremia in malignancy 4432
 Hyperpituitarism glycosuria in 4407
 Hyperpotassemia in malignancy 4432
 Hyperproteinemia in malignancy 4432
 Hypersensitivity See also *Allergy*
 definition 4189
 reactions and active immunity 4165
 to antibiotic agents 4186
 histamine type 4137
 tuberculin-type 4137
 to bacterial antigen 4134
 to drugs 4136
 guiding principles 4138
 histamine type acute 4166
 as tuberculin type 4171 4172
 therapeutic implications 4186
 tuberculin type chronic 4168
 Hypertension essential 4360
 Hyperthyroidism glycosuria in 4407
 Hypnotics 4518
 Hypoglycemia in malignancy 4432
 Hypogonadism 4192
 Hyponatremia in malignancy 4432
 Hypopotassemia in hypercortinism 4154
 in malignancy 4432
 Hypoproteinemia causes 4238
 Hypotension adrenogens in 4150
 I¹³¹ in cancer therapy 4435
 Ichthyol 4332
 IG 10870 4416
 Immune globulin placental 4466
 Immunity active 4362
 passive 4263
 Immunization 4362
 for adult, 4365
 author's method 4364
 diphtheria 4363
 on exposure 4365
 influenza 4373
 measles 4364
 pertussis 4364 4462

- Immunization plague 4166
 smallpox 4363 4364
 tetanus 4564
 for travelers 4366
 triple 4364
 Impotence androgens in 4191
 Impregnation temperature variation due to 4411
 Inclusion conjunctivitis 4368
 India, seven-day fever of 4293
 Infancy immunization in 4363
 Infantile paralysis See *Poliomyelitis*
 Infections, *Aerobacter aerogenes*, 4161
 Bacteroides funduliformis 4230
 colon bacillus 4291
 meningococcal, 4408
 pneumococcal 4468
 staphylococcal, 4523
 streptococcal 4533
 transmitted by insects or rats 4373
 Infectious anemia of horses 4634
 diseases preventive medicine 4367 4368
 mononucleosis 4369
 neuritis 4369
 polyneuritis 4369
 Infertility period of 4412
 Influenza *Hemophilus* 4370
 vaccine 4207
 virus infections 4372
 vaccine 4207
 technic of immunization 4373
 Insect repellents, 4377
 Insecticides 4373
 list of 4376
 poisonings due to 4374 4375
 Intocostin See *Chondrodendron tomentosum*
 Intracranial pressure increased glycomuria with, 4407
 Intrathecal therapy evaluation 4409
 Intravenous infusion fluids for 4238
 of protein hydrolysates 4237
 reactions 4238
 Iodide 4377
 in actinomycosis 4142
 and allergic hypersensitivity evaluation 4178
 in blastomycosis 4257
 in chromoblastomycosis 4288
 in geotrichosis 4345
 inhalation method 4257
 in maduromycosis, 4392
 therapeutics 4378
 toxicity 4378
 Iodine as fungicide 4332
 radioactive 4435
 Iodostarine 4378
 Iontophoresis in chromoblastomycosis 4287
 Ipecac 4182
 Irradiation See also *X rays*
 in malignancy 4153
 isonipocaine See *Meperol* *na*
 isonorin 4158 4172 4379
 isopentaquime oxalate 4379 4397
 isopropyl arterenol, 4158
 isotopes in cancer therapy 4435
 isuprel 4158 4380
 in bronchial asthma, 4270
 Ito-Reensterna skin test in chancreoid 4276

 JAPANESE B encephalitis 4310
 Japanese river fever 4596
 Jaundice catarrhal See *Virus hepatitis*
 homologous serum 4358
 prophylaxis 4359
 infectious, 4527
 spirochetal, 4347
 Jaw lumpy 4141
 Jejunostomy feeding 4236
 Jungle fever 4392
 yellow fever 4634

 BALA AXUR, 4385
 Kaposi's varicelliform eruption 4335
 Kedani 4596
 Kempner's rice diet in hypertension 4561
 Keratitis maculosa, 4319
 nummularis 4519
 Keratoconjunctivitis 4319
 Keratosis blennorrhagica 4359
 Kerosene 4446
 Lew Gardens spotted fever 4506
 Kidneys neoplasms of 4627
 Limpitu 4491
 Klebsiella 4380
 Koch-Weeks conjunctivitis 4382
 Kvein test in sarcoidosis, 4513
 Kwell, 4447 4514
 in scabies 4514

 LABORATORY procedures simplified 4382
 tests for cancer detection 4429
 specialist, 4430
 Lactate Ringer's solution 4239
 Lactation inhibition 4194 4325
 Lactic acid 4592
 Lactosuria 4404
 Lambliasis See *Guardians*
 Landry's paralysis 4569
 La kspur 4447
 Larynx neoplasms of 4492
 Lauron 4347
 Lead poisoning BAL in 4252
 Leche de Higueron 4198 4240
 Ledimac 4235
 Lee-Whit-Howell test, 4572
 Leishmaniasis 4383
 Leprosy 4386
 sterogyl in 4333

- Leptospirosis icterohemorrhagica 4527
 Lethane as insecticide 4374 4376
 as pediculocide 4447
 Leukemia acute 4262
 chronic lymphatic 4263
 myeloid 4264
 Leukopenia in Colorado tick fever 4094
 infectious 4368
 Levulosuria 4403
 Libman Sacks syndrome 4311
 Lumber neck 4266
 Link Shapiro modification of Quick test 4574
 Lipo adrenal cortex 4145
 Liquor potassii arsenitis 4231
 Lixaphen See *Tolserol*
 Listeria monocytogenes infections 4387
 Litmoecidin 4201 4388
 Liver abscess amebic treatment 4186
 flake infestation 4288
 LL-47 4388
 Loiasis 4388
 Lobotomy in inoperable malignancy 4436
 Lockjaw See *Tetanus*
 Loeffler's syndrome 4318
 Lonalac 4235
 Louping ill 4634
 Louse control 4377
 Lues See *Syphilis*
 Lumbar sympathetic block 4579
 Lumpy jaw 4141
 Lung fluke 4445
 Lungs neoplasms of 4495
 Lupulin in tuberculosis 4608
 Lupus erythematosus acute disseminated 4388
 chronic 4389
 vulgaris 4390
 Lutz-Splendore Almeida's disease 4235
 Lygranum S.T. 4207
 Lymphocytic choriomeningitis 4390
 Lymphocytosis infectious 4368
 Lymphoma malignant 4265
 Lymphopathia venereum 4391
 Lyovac antivenum 4427
 Lyssa See *Rabies*
- M 7535 See *Antrycide*
 M and H 800 See *Pentamidine*
 Maduromycosis 4392
 Malaria 4392
 aestivo-autumnal, 4394
 falciparum chloroquine in 4292
 prophylaxis falciparum 4396
 vivax 4397
 terminology 4394
 treatment, 4393
 vivax and falciparum differential diagnosis 4394
 relapsing isopentaquine in 4379
- Male androgens in 4193
 breast tumors of 4399
 climacteric androgen in 4193
 estrogens in 4326
 hormone See *Androgens*
 reproductive system neoplasms of 4399
 Malignancy 4426-4438
 Malignant lymphoma 4265
 neoplasms 4426 See also *Cancer* and *Carcinoma*
 pustule 4198
 Malta fever 4271
 Maltosuria 4404
 Mandelic acid 4399
 in colon bacillus infections 4292
 as urinary antiseptic 4626
 Mauds three day fever of 4311
 Mapharsen See *Ozophenarsine*
 Marrow biopsy 4431
 Marcell's fever 4269
 Mastalgia 4194
 Measles 4400
 immune serum 4259
 immunization 4364
 prevention gamma globulin in 4259 4340-4400
 vaccine 4207
 Mechlorethamine hydrochloride 4440
 Mediastinum neoplasms of 4499
 Mediterranean fever 4271
 Melanuria 4679
 Melarsen 4397
 Melitensis 4271
 Meliturias 4401
 differential diagnosis 4402
 tests for 4103
 Meningococcal infections 4408
 prophylaxis 4408
 Meningococcus serum 4261
 vaccine 4207
 Menometrorrhagia androgens in 4194
 Menopause estrogens in 4195 4395
 Menstruation temperature variations in 4411
 Meconium 4235
 Mepacrine See *Quinacrine*
 Meperidine hydrochloride 4415
 available products 4416
 Meprane 4325
 Meralluride 4305
 Mercodione See *Dihydrocodanone*
 Mercubidrin 4305
 Mercurial diuretics 4305
 Mercurials as fungicides 4392
 Mercurophylline injection 4305
 Mercury 4415
 as pediculocide 4447
 poisoning BAL in 4252
 Mersalyl and theophylline 4393
 Mercuzanthin 4305
 Mestibol 4325

- Metamphetamine 4188
 Metandren linguets, 4192
 Methadone hydrochloride 4415 4416
 Methenamine 4413
 as urinary antiseptic, 4626
 Methionine-D 4235
 Methoxychlor as insecticide 4374 43 6
 Methyl dihydromorphine *See Metopon*
 Methyrosaniline 4343
 testosterone 419
 Metopon, 4416
 in inoperable malignancy 4436
 Metrazol, 4183
 in barbiturate poisoning 4254
 Meuse fever 4390
 Mianeh fever 4491
 Microbe immunity 4133
 Migraine calergone in, 4490
 dihydroergotamine in 4421
 Miner's anemia, 46-3
 Miodine *See Methadone*
 Miracil D in schistosomiasis 4518
 Mitocides, 4377
 Mittelschmerz *See Lysotulaton*
 Molluscum contagiosum 4413
 Moniliasis 4413
 Mononucleosis, infectious 4369
 Morax Axenfeld conjunctivitis, 4414
 Morbilli, 4400
 Morphine derivatives, 4415
 list, 4416
 Mosquito repellents 4377
 Motion sickness, dramamine in 4218
 Mountain fever 4307
 Mucin aluminum hydroxide magnesium 4344
 Muscotin 4344
 Multiple myeloma 4266
 Mumps, 4417
 complications gamma globulin in 4340
 4418
 incidence 4418
 prevention 4259
 immune serum, 4260
 Muscle relaxants 4418
 list of 4419
 Mushroom poisoning 4424
 Mussel poisoning 4424
 Myanesin *See Tolserol*
 Myasthenia gravis 4425
 Mycetoma 4392
 Mycosis systemic, 4336
 diagnostic procedures 4337
 Myeloma multiple 4266
 Myochrysine 4347 4504
 Nasopharynx, neoplasms of 4497
 Neo-antergan 4213
 Neosarsphenamine 4232
 Neocryl 4595
 Neohetramine 4213
 Neomycin bacterial spectrum 4250
 in tuberculosis, 4608
 Neoplasms, 4426-4438 *See also Cancer Carcinoma and Tumors*
 malignant, early signs, 4476
 etiology 4426
 Neosalvarsan 4232
 Neostam 4225
 in leishmaniasis, 4385
 Neostibosan 4225 4385
 in rhinosporidiosis, 4505
 Neostigmine in myasthenia gravis, 4425
 Neostimosan *See Stibophen*
 Neosynephrine 4158
 Nephropathy glycosuria in, 4407
 Nerve block in malignancy 4436
 Nervous system neoplasms of 4438
 Nethaphyl, 4213
 New tuberculin in tuberculosis, 4608
 Newcastle virus disease 4459
 Nicolas-Favre's disease 4391
 Nicotine as insecticide 4376
 Nikethamide 4158
 Nine mile fever 4484
 Nirulfazole 4345
 Nitrates in hypertension 4360
 Nitrites, 4422
 Nitrogen mustard 4439
 in Hodgkin's disease 4263
 indications 4441
 injection technique 4440
 in leukemia 4263 4264
 in malignancy 4436
 therapy results, 4440
 toxicity 4441
 Nocardiosis, 4441
 Non-eranthematous tick fever 4293
 Norodin 4153
 Nose neoplasms of 4492
 Nutragest, 4235
 OBEXAIR benzedrine in 4159
 Occupational dermatitis, 4297
 Oil of chenopodium 4198 4278
 Ointment, fungicide 4332
 penicillin evaluation 4452 4454
 Old tuberculin in tuberculosis, 4608
 Onchocerciasis, 4441
 Onychia, treatment, 4414
 Onychomycosis 4333
 Ophoritis, prevention 4419
 Ophthalmia neonatorum prevention 4350
 Opates 4416 4417
 in malignancy 4457

NAPHAZOLINE, 4158

Napburide 4553

Naprylate 4332

Nasal congestion, adrenergic in 4159

- Leptospirosis icterohemorrhagica 4327
 Lethane as insecticide 4374 4376
 as pediculicide 4447
 Leukemia acute 4962
 chronic, lymphatic 4263
 myeloid 4264
 Leukopenia in Colorado tick fever 4294
 infectious 4368
 Levulosuria 4403
 Libman Sacks syndrome 4311
 Lumber neck, 4260
 Link-Shapiro modification of Quick test 4574
 Lipo adrenal cortex 4145
 Liquor potassii arsenit 4231
 Lissaphen See Tolserol
 Listeria monocytogenes infections 4387
 Litmoecidin 4201 4383
 Liver abscess amebic treatment 4186
 flake infestation 4288
 LL-47 4398
 Loaiasis 4389
 Lobotomy in inoperable malignancy 4436
 Lockjaw See Tetanus
 Loeffler's syndrome 4318
 Lonalac 4235
 Louping ill 4634
 Louse control 4377
 Lues See Syphilis
 Lumbar sympathectomy block, 4579
 Lumpy jaw 4141
 Lung fluke 4445
 Lungs neoplasms of 4493
 Lupulin in tuberculosis 4608
 Lupus erythematosus acute disseminated
 4388
 chronic 4389
 vulgaris 4390
 Lutz-Splendore Almeida's disease 4255
 Lygranum ST 4207
 Lymphocytic choriomeningitis 4390
 Lymphocytosis infectious 4368
 Lymphoma malignant 4265
 Lymphoplasma venereum 4391
 Lyovac antivenin 4127
 Lyssa See Rabies
- M 7555 See Antrycide
 M and H 800 See Pentamidine
 Maduromycosis 4392
 Malaria 4392
 aestivo-autumnal, 4394
 falciparum chloroquine in, 4282
 prophylaxis falciparum 4396
 vivax 4397
 terminology 4394
 treatment, 4398
 vivax and falciparum differential diagnosis
 4394
 relapsing isopentaquine in 4379
- Male androgens in 4193
 breast tumors of 4399
 climacteric androgen in 4193
 estrogens in 4326
 hormone See Androgens
 reproductive system neoplasms of 4399
 Malignancy 4426-4438
 Malignant lymphoma 4265
 neoplasms 4426 See also Cancer and
 Carcinoma
 pustule 4198
 Malta fever 4271
 Maltoosuria 4404
 Mandelic acid 4399
 in colon bacillus infections 4292
 as urinary antiseptic, 4626
 Mamma three-day fever of 4311
 Mapharsen See Oxophenarsine
 Marrow biopsy 4431
 Marseilles fever 4269
 Mastalgia 4194
 Measles 4400
 immune serum 4259
 immunization 4304
 prevention gamma globulin in 4259 4340-
 4400
 vaccine 4207
 Mechlorethamine hydrochloride 4440
 Mediastinum neoplasms of 4493
 Mediterranean fever 4271
 Melanuria 4629
 Melarsen 4397
 Melitensis 4271
 Meliturius 4101
 differential diagnosis 4102
 tests for 4103
 Meningococcal infections 4109
 prophylaxis 4108
 Meningococcus serum 4261
 vaccine 4207
 Menometrorrhagia androgens in 4194
 Menopause estrogens in 4195 4325
 Menstruation temperature variations in 4411
 Meonine 4232
 Mepacrine See Quinacrine
 Meperidine hydrochloride 4415
 available products 4416
 Meprane 4325
 Meralluride 4305
 Mercodione See Dihydrocodonone
 Mercuhydrin 4305
 Mercurial diuretics 4205
 Mercurials as fungicides 4392
 Mercurophylline injection 4305
 Mercury 4415
 as pediculicide 4447
 poisoning H.L. in 4252
 Mersalyl and theophylline 4305
 Mercuzanthin 4305
 Mestilbol 4325

- Penicillin vehicles and accessories 4450 4451
 in venereal prophylaxis 4557
 Penicilliosis 4460
 Penicillins 4425
 in trypanosomiasis 4505
 Pentaquine 4397 4460
 in malaria relapse 4398
 Pentosuria 4403
 Pentylene tetrazol See *Metrazol*
 Perazil 4213
 Percorten 4145
 in Hodgkin's disease 4263
 in lupus erythematosus acute 4389
 in peri arteritis nodosa 4461
 in rheumatic fever 4500
 in verrucous endocarditis 4513
 Peri arteritis nodosa 4460
 Periodic disease 4461
 Perleche 4413
 Pertussis 4462
 immune serum 4260
 immunization 4504 4462
 prevention gamma globulin in 4510 4463
 vaccine 4207 4463
 Pethidine 4416
 Petroff concentration technique 4398
 Petrolatum ointment 433
 Phenamidine 42.3
 Phenarson 4182 4233
 Phenergan 4213
 Phenol, 4333
 Phenothiazine 4198
 in oxyuriasis 4444
 Phenylephrine 4188
 Pheochromocytoma diagnostic test 4420
 Phlebotrombosis 4575
 anticoagulants in 4577
 early signs 4577
 prophylactic measures 4578
 Phosphaljel 4344
 Phosphates organic as insecticides 4375 4376
 Phosphorus radioactive 4264
 Phthalylsulfacetamide See *Thalamyl*
 Phthalylsulfathiazole 4548
 Physical allergy 4465
 Picragol 4592
 Picrotoxin 4188
 Pigmentary changes in urine 4628
 Pink eye 4382
 Pinta 4463
 Pinta fever of Mexico 4507
 Pinworm infestation 4443
 Pituitary gland neoplasms 4318
 hormone anterior adrenocorticotrophic See
 ACTH
 Pityriasis rosea 4465
 Placental immune globulin 4468
 Plague 4466
 immune serum 4260
 prophylaxis 4466
 Plague vaccine 4207
 Plasma 4258
 Plasmodium naphthoate 4414
 Pleura neoplasms of 4493
 Plumbum BAL in 4257
 Pneumococcal infections 4468
 Pneumococcus antigens 4208
 Pneumonia vaccine 4208
 Pneumonitis eosinophilic 4318
 Poison ivy 4297
 Poisoning BAL in 4251
 barbiturate 4 53
 mushroom 4461
 mussel 4424
 Poliomyelitis 4470
 immune serum 4260
 vaccine 4208
 Polka fever 4298
 Pollinosis 4477
 perennial desensitization schedule 4470
 preseasonal treatment 4478
 Polycythemia 4265
 Polymyxio 4490
 in colon bacillus infections 4203
 toxicity 4481
 Polyneuritis infectious 4360
 Pones 4385
 Poradenitis 4391
 Porphyria symptoms and diagnosis 4630
 Porphyria 4629
 Posadas-Wernicke disease 4289
 Postvaccinal encephalomyelopathy preven-
 tion 4631
 Potassium arsenite in chronic lymphatic
 leukemia 4263
 iodide 4377
 solution 4378
 PPD (purified protein derivative) in tuber-
 culosis test, 4609
 Pragmatar 4332
 Pre anesthetic medication 4418
 Precanceroses 4560
 Pregnancy variations in body temperature
 4411
 Pregnenolone 4145
 Premenstrual tension 4195
 Prenolon 4145
 method of administration 4157
 Preparation 0257 in cholera 4285 4546
 Prethial fever 4634
 Preventive medicine in infectious diseases
 4367 4368
 Primaquine 4397
 Priscol do age and uses 4423
 in hypertension 4360
 in poliomyelitis 4474
 Privine 4158
 in common cold 4295
 Promin 4481
 in leprosy 4386

- Oral feedings of protolysates 4935
 recipes 4238
- Oranixol 4422
- Oracox 4207
- Orchitis prevention 4418
- Oridine 4378
- Oriental sore 4385
- Ornithosis 4441
- Oropharynx neoplasms of 4301
- Oroya fever 4032
- Orthodoxine 4153
- Orthoxine hydrochloride 4442
- Osteitis fibrosa cystica 4318
- Ovine encephalomyelitis 4634
 pustular dermatitis 4634
- Ovulation 4195
 temperature variation due to 4421
- Oxophenarsine 4233
- Oxygen in bronchial asthma 4271
 in coronary occlusion 4584
 in phlebotrombosis 4578
- Oxyquinolines 4442
- Oxyuriasis 4443
- Pa* in chronic leukemia 4264
 in polycythemia 4265
- PABA See *Para-aminobenzoic acid*
- Paia drugs for 4417 4418
- Paludism 4392
- Paludrine See *Chloroquine*
- Pamaquin naphthoate 4377 4444
- Panama six-day fever 4298
- Pancreas neoplasms of 4317
- Panpanit 4420
- Papanicolaou test 4430
- Pa pin syndrome of 4286
- Pappataci fever 4312
- Para-aminobenzoic acid* 4182 4445
 in dermatomyositis 4300
 in rheumatic fever 4501
 in Rocky Mountain spotted fever 4508
 in tsutsugamushi fever 4597
 in typhus fever 4592
- Para-aminosalicylic acid* in tuberculosis 4608
 schedule 4611
 with streptomycin 4812
- Paracoccidioidal granuloma 4255
- Paragonimiasis 4415
- Paralysis agitans adrenergens in 4159
- Parathion as insecticide 4375 4376
- Parathyroid neoplasms of 4318
- Paratrachoma 4568
- Paratyphoid fever See *Salmonellosis*
 vaccine 4207
- Parenamune 4239
- Parkinsonism artane in 4419
 caramiphen in 4420
 oranixon in 4422
- Paronychia treatment 4414
- Parotitis epidemic 4417
- Parrot fever 4441
- PAS See *Para-aminosalicylic acid*
- Pediculocides 4446
- Pediculosis 4448
- Pelletierine tannate 4193 4447
- Penicillin 4447
 F 4449
 G 4449
 H 4449
 X 4449
- Penicillin* in actinomycosis 4441
 in *Aerobacter aerogenes* infections 4168
 aerosols evaluation 4459
 in anthrax 4199
 vs aureomycin 4457
- Penicillin* vs bacitracin 4248 4455
 in bacterial endocarditis 4314
 bacterial spectrum 4455
 blood coagulation increased with, 4139
 in cerebral thrombosis 4582
 in chancroid 4277
 in erysipelas 4320
 in frambesia 4330
 in fusospirochetosis 4358
 in gas gangrene 4342
 in gonorrhea 4350
 Hershheimer reactions due to 4450
 historical review 4447
 hypersensitivity reactions 4457
 prevention 4458
 master standard 4449
 in measles 4400
 in meningococcal infections 4409
 ointment 4352
 evaluation 4452 4454
 in ornithosis 4449
 and other antibiotics 4457
 parenteral vehicles of choice 4451
 in pneumococcal infections 4468
 products preferred 4452 4453
 in rat bite fever 4490
 in relapsing fever 4491
 in rheumatic fever 4498
 salts of 4450
 in scarlet fever 4516
 in spirochetal jaundice 4597
 in staphylococcal infections 4530
 prophylaxis 4530
 in streptococcal infections 4536
 in streptococcal sore throat, 4538
 vs streptomycin 4457
 vs sulfonamides 4456
 in syphilis 4555
 in tetanus 4566
 therapy summary 4453
 toxicity 4457
 troches 4452 4454
 as urinary antiseptic 4637
 vaccines 4449

- Penicillin vehicles and accessories 4450 4451
 in venereal prophylaxis 4557
 Penicilliosis 4160
 Pentamidine 4223
 in trypanosomiasis 4305
 Pentaquine 4397 4160
 in malaria relapse 4398
 Pentosuria 4403
 Pentylene tetrazol See *Metrazol*
 Perazil 4213
 Percorten 4145
 in Hodgkin's disease 4263
 in lupus erythematosus acute 4339
 in peri arteritis nodosa 4161
 in rheumatic fever 4300
 in verrucous endocarditis 4313
 Peri arteritis nodosa 4460
 Periodic disease 4461
 Perleche 4113
 Pertussis 4462
 immune serum 4260
 immunization 4364 4462
 prevention gamma globulin in 4340 4463
 vaccine 4207 4463
 Pethidine 4416
 Petroff concentration technic 4308
 Petrolatum ointment, 4332
 Phenamidine 4225
 Phenarson 4192 4233
 Phenegan 4213
 Phenol 4333
 Phenothiazine 4198
 in oxyuriasis 4144
 Phenylephrine 4158
 Pheochromocytoma diagnostic test 4480
 Phlebotrombosis 4576
 anticoagulants in 4577
 early signs 4377
 prophylactic measures 4576
 Phosphajel, 4344
 Phosphates organic as insecticides 4375 4376
 Phosphorus radioactive 4264
 Phthalylsulfacetimide See *Thalamyd*
 Phthalylsulfathiazole 4348
 Physical allergy 4103
 Picragol 4392
 Picrotoxin 4188
 Pigmentary changes in urine 4628
 Pink eye 439^o
 Pinta 4463
 Pinta fever of Mexico 4507
 Pinworm infestation 4443
 Pituitary gland neoplasms 4316
 hormone anterior adrenocorticotrophic See
 ACTH
 Pityriasis rosea 4165
 Placental immune globulin 4466
 Plague 4466
 immune serum 4260
 prophylaxis 4466
 Plague vaccine 4207
 Plasma 4258
 Plasmodium naphthoate 4411
 Pleura neoplasms of 4493
 Plumbism BAL in 4252
 Pneumococcal infections 4468
 Pneumococcus antigens 4 08
 Pneumonia vaccine 4 08
 Pneumonitis eosinophilic 4318
 Poison ivy 4297
 Poisoning BAL in 4251
 barbiturate 4253
 mushroom 4421
 mussel 4424
 Poliomyelitis 4470
 immune serum 4260
 vaccine 4208
 Polka fever 4298
 Pollinosis 4477
 perennial desensitization schedule 4479
 preseasonal treatment, 4478
 Polycythemia 4263
 Polymyxia 4480
 in colon bacillus infections 4203
 toxicity 4481
 Polyneuritis infectious 4369
 Potos 4385
 Poradenitis 4391
 Porphyria symptoms and diagnosis 4630
 Porphyrinuria 4629
 Posadas Wernicke disease 4280
 Postvaccinal encephalomyelopathy prevention 4631
 Potassium arsenite in chronic lymphatic leukemia 4263
 iodide 4377
 solution 4378
 PPD (purified protein derivative) in tuberculous test 4609
 Praguatar 4332
 Pre-anesthetic medication 4418
 Precancerosis 4560
 Pregnancy variations in body temperature 4111
 Pregnenolone 4145
 Premenstrual tension 4193
 Prenolon 4145
 method of administration 4157
 Preparation 6^o57 in cholera 4283 4346
 Pretibial fever 4634
 Preventive medicine in infectious diseases 4367 4368
 Primaquine 4397
 Prisol dosage and uses 4423
 in hypertension 4360
 in poliomyelitis 4471
 Privine 4158
 in common cold 4295
 Promm 4481
 in leprosy 4386

- Promizole 4482
 in actinomycosis 4443
 in leprosy 4386
 Prontylm 4546
 Propadrine 4158
 Propamidine 4025
 Prophylaxis in surgical procedures 4291 See
 also *Chemoprophylaxis*
 Propionic acid 4332
 Prostate neoplasms of 4399
 Protamine in hyperheparinemia 4202
 Protein deficiency 4038
 Protein hydrolysates 4234 4039
 intravenous 4037
 reactions 4238
 jejunostomy 4236
 oral 4235
 products 4235
 Protenum 4235
Proteus vulgaris infections 4482
 Prothrombin 4259
 activity estimations evaluation 4575
 test 4573
 Lank Shapiro modification 4574
 Protolysate 4235
Pseudomonas aeruginosa infections 4482
Pseudorubella 4522
 Psittacosis 4441
 Psoriasis 4483
 Psychogenic allergy 4484
 Psychotherapy in allergy 4180
 Pulmonary distomiasis 4445
 Pyrethrum 4514
 Pyrethrum flowers as insecticide 4376
 Pyribenzamine 4218
 ■ benadryl 4215
 ointment in spider bite 4228
 schedule for 4216
 Pyridium as urinary antiseptic 4607
- Q** FEVER 4484
 Quick test 4573
 Quinacrine 4198 4597 4485
 in teniasis 4561
 Quinine 4486
 bisulfate 4397
 ethyl carbonate 4485
 Quinoxyl, 4443
- RABBIT fever See *Tularemia*
 Rabies 4487
 vaccine 4208 4487 4488
 Radiation See also *X ray*
 sickness prophylaxis 4265
 therapy aureomycin in 4246
 Radioactive gold 4435
 iodine 4435
 tracers for diagnosis of cancer 4430
 Rat bite fever 4490
- Rectal palpation 4302
 Rectum neoplasms of 4301
 Red cells 4259
 Reiter's syndrome 4323
 Relapsing fever 4491
 Renal diabetes 4406
 Resochin See *Chloroquine*
 Resorcin 4332
 Respiratory infection upper 4004
 system neoplasms of 4490
 vaccines 4008
 Rheumatic fever 4493
 phases in 4494
 prophylaxis 4497
 tuberculin type hypersensitivity in
 phases 4171
 vaccine 4008
 Rheumatoid arthritis 4502
 comparison with rheumatic fever 4502
 gold therapy in 4348
 vaccine 4008
 Rhinoscleroma 4505
 Rhinospordiosis 4505
 Rice diet Kempner's 4361
 Rickettsialpox 4506
 Rift valley fever 4631
 Ringer's solution 4038
 Ringworm infection 4333
 Rio Grande fever 4271
 Roach control 4377
 Rocky Mountain spotted fever 4507
 serum 4260
 vaccine 4008 4507
 Rodenticides poisonings due to 4375
 Roentgen therapy See *Y rays*
 Ronone 4514
 Rose rash 4522
 Roseola 4400
 epidemic See *Rubella*
 infantum 4522
 Rotenone 4376 4447
 Roundworm infestation 4240
 Rubella 4509
 congenital defects due to 4509
 serum 4260
 Rubner test 4403
 Ruckfall typhus 4491
 Russian forest spring disease 4510
- Safe period 4412
 St Anthony's fire 4320
 St Louis encephalitis 4310
 vaccine 4009
 St Vitus dance 4287
 Sajodin 4378
 Salicylamide 4333
 Salicylates 4511
 allergic hypersensitivity and evaluation
 4173

- Salicylates in rheumatic fever evaluation 4394
 salmonellosis 4311
 salt as trichomonicide 4392
 Salundek 4333
 Salvarsan 4231
 Salyrgan theophylline solution, 4303
 San Joaquin valley fever 4089
 sandfly fever 4312
 sanocrysin 4347 4504
 santonin 4198
 in ascariasis 4241
 sarcoidosis 4310
 Scabicides 4313
 Scabies 4314
 Scarlet fever 4315
 immune serum 4059
 streptococcus antitoxin 4261
 vaccines 4208
 Schistosomiasis 4316
 Scopolamine 4423
 Scrotum neoplasms of 4399
 scrub typhus 4396
 Seacickness 4218
 seat worm infestation 4443
 Sedatives, 4417 4418 4518
 in coronary occlusion 4384
 Sensitivity negative definition 4189
 positive definition 4189
 presumptive definition 4189
 probable definition 4189
 terminology 4189
 Selenium as urinary antiseptic, 46 7
 Serodiagnosis 4431
 Serum 4237
 allergy 4519
 heterologous 4238 4060
 homologous 4259
 injections procedures 4190 4191
 Seven-day fever of India 4298
 Sevinon in psoriasis 4483
 Shank fever 4390
 Shellfish poisoning 4404
 Shigellosis 43 0
 Shin fever 4390
 Shingles 4333
 Shipyard conjunctivitis 4319
 Shock, anaphylactic 4187
 Silver 43.2
 arsphenamine 4282
 Simmonds disease 4316
 Six-day fever Panama 4298
 Sixth disease 4522
 Skeletal system neoplasms of 4522
 Skin test blastomycosis 4237
 for hypersensitivity 4189
 tumors of 4560
 Sleeping sickness 4303
 Smallpox 4223
 vaccinations 4363
 vaccine 4208
 Smithwick operation in hypertension 4361
 SN 6 42 5
 SN 7618 See *Chloroquine*
 SN 9404 4225
 SN 9406 4225
 SN 12337 See *Chloroquine*
 SN 13270 See *Primaquine*
 SN 13074 See *Isopentagaine orotate*
 SN 150 6 See *Pentagaine*
 Snake bite 4523
 Soapless detergents 4335
 Sodium arsenite 4233
 chloride retention with hypercortinism 4154
 fluoroacetate poisoning due to 4375
 iodide 4377
 lactate 4238
 sulfadiazine 4546
 sulfamerazine 4516
 Sodoku See *Rat bite fever*
 Soft chancre 4276
 Solganol 4347
 Solganol B 4504
 Solustibosan 4225
 Sontochin See *Chloroquine*
 Sopronol 4333
 Sore throat streptococcal, 4338
 Sound crunching 4638
 South American sleeping sickness See *Trypanosomiasis*
 Spider bite 4 28
 Spinal cord tumors 4439
 Spirillum fever 4491
 Spirochetal jaundice 4527
 immune serum 4260
 Spirocheticides 4527
 list of 4528
 Spirochetosis 4591
 Splanchicectomy in hypertension 4361
 Splenomegaly tropical 4385
 Sponge mop y 4430
 Sporotrichosis 45.8
 Staphylococcus antitoxin 4261
 bact riophage 4208
 immunogen 4 09
 infections 4328
 toxin 4208
 vaccine 4208
 Streptococcus vaccine combined 4209
 Staticin 4275
 STB 4330
 in frambesia 4331
 Stellate ganglion block 4380
 in cerebral thrombosis 4582
 Sterogyl 4533
 Stevens-Johnson disease 43 3
 Stibamine 4025
 in leishmaniasis 4385
 Stibamose 4 25
 Stibatin 4225

- Promizole 4482
 in actinomycosis 4143
 in leprosy 4386
 Prontylin 4346
 Propadrine 4158
 Propamidine 4225
 Prophylaxis in surgical procedures 4291 *See*
 also *Chemoprophylaxis*
 Propionic acid 4332
 Prostate neoplasms of 4399
 Protamine in hyperheparinemia 4202
 Protein deficiency 4038
 Protein hydrolysates 4234 4039
 intravenous 4237
 reactions 4238
 jejunostomy 4236
 oral 4035
 products 4235
 Proteneum 4235
Proteus vulgaris infections 4182
 Prothrombin 4259
 activity estimations evaluation 4573
 test, 4573
 Link Shapiro modification 4574
 Protolysate 4235
Pseudomonas aeruginosa infections 4182
 Pseudorubella 4322
 Psittacosis 4441
 Psoriasis 4483
 Psychogenic allergy 4484
 Psychotherapy in allergy 4180
 Pulmonary distomatiasis 4435
 Pyrethrum 4514
 Pyrethrum flowers as insecticide 4376
 Pyrribenzamine 4213
 as benadryl 4215
 ointment in spider bite 4223
 schedule for 4016
 Pyridium as urinary antiseptic 4627
- Q** **FEVER** 4481
 Quick test, 4573
 Quinacrine 4198 4397 4485
 in teniasis 4561
 Quinine 4486
 bisulfate 4397
 ethyl carbonate 4185
 Quinoxyl, 4443
- RABBIT** fever *See* *Tularemia*
 Rabies 4487
 vaccine 4208 4487 4188
 Radiation *See* also *X ray*
 sickness prophylaxis 4265
 therapy aureomycin in 4046
 Radioactive gold 4135
 iodine 4135
 tracers for diagnosis of cancer 4132
 Rat bite fever 4420
- Rectal palpation 4302
 Rectum neoplasms of 4301
 Red cells 4059
 Reiter's syndrome 4303
 Relapsing fever 4491
 Renal diabetes 4106
 Resochin *See* *Chloroquine*
 Resorcin 4332
 Respiratory infection upper 4094
 system neoplasms of 4490
 vaccines 4208
 Rheumatic fever 4493
 phases in 4494
 prophylaxis 4497
 tuberculin type hypersensitivity in
 phases 4171
 vaccine 4008
 Rheumatoid arthritis 4502
 comparison with rheumatic fever 4502
 gold therapy in 4348
 vaccine 4203
 Rhinoscleroma 4505
 Rhinosporidiosis 4305
 Rice diet Kempner's 4361
 Rickettsialpox 4506
 Rift valley fever 4631
 Ringer's solution 4098
 Ringworm infection 4333
 Rio Grande fever 4271
 Roach control 4377
 Rocky Mountain spotted fever 4507
 serum 4280
 vaccine 4208 4507
 Rodenticides poisonings due to 4375
 Roentgen therapy *See* *X rays*
 Ronone 4514
 Rose rash 4522
 Roseola 4400
 epidemic *See* *Rubella*
 infantum 4522
 Rotenone 4376 4447
 Roundworm infestation 4040
 Rubella 4509
 congenital defects due to 4509
 serum 4260
 Rubner test, 4403
 Ruckfall typhus 4491
 Russian forest spring disease 4510
- Safe period 4412
 St. Anthony's fire 4320
 St. Louis encephalitis 4310
 vaccine 4009
 St. Vitus dance 4287
 Sajodin 4378
 Salicylanilide 4333
 Salicylates 4511
 allergic hypersensitivity and evaluation
 4178

- Suramin 4553 4595
 in African sleeping sickness 4553
 in trypanosomiasis 4594 4595
 toxicity 4554
 Surgical biopsy 4431
 procedures in actinomycosis 4143
 aureomycin in 4245
 in hypertension 4361
 in malignancy 4437
 in myasthenia gravis, 4425
 in phlebotrombosis, 4379
 prophylactic antibiotic therapy 4291
 in tuberculosis 4606
 Swimming pool conjunctivitis 4368
 Swineherd's diseases 4634
 Sympathectomy in malignancy 4436
 Sympatholysis 4423
 Syndrome of pain 4286
 Syphilis 4354
 false-positive test, evaluation 4354
 prophylaxis 4356
 treatment choice of 4355
 Syrup ammonium mandelate 4400
 Syrup of ferrous iodide 4378
 of hydrotic acid 4378

TAGATHEX 4213
 Tapeworm infestations 4361
 Tar 4333 4314
 Tartar emetic, 4224
 in schistosomiasis technique 4516
 TB I-608 See *Conioben*.
 T.C.A.P. ointment, 4333
 TDE rhotane 4374 4376
 Tegumentary system neoplasms of 4559 See also *Skin*.
 Temperature variations due to menstruation
 ovulation and impregnation 4411
 Teniasis 4361
 Teropterin evaluation 4434
 Terramycin 4562
 bacterial spectrum 4563
 in brucellosis 4274
 in rheumatic fever 4498
 therapeutics 4243 4563
 toxicity 4563
 as urinary antiseptic 4627
 Test(s) Bial 4103
 blastomycosis 4257
 Bolen 4429
 Borchardt 4403
 of coagulability 4572
 cocci odion 4289
 Fren 4391
 histoplasmin 4357
 for hypersensitivity 4189
 Ito-Reensterna 4276
 Kveim 4513
 Papanicolaou 4430
 Test(s) prothrombin activity 4573
 Rubner 4403
 syphilis false-positive evaluation 4554
 Testosterone propionate 4145 4192
 in mumps 4418
 Tetanus 4564
 antitoxin 4261
 immunization 4364
 prophylaxis 4564
 toxoid 4209
 Tetrachlorethylene 4198 4569
 in ascariasis 4240
 in oncinariasis 4624
 Tetraethylammonium chloride 4422
 in hypertension 4360
 Tetra-ethylpyrophosphate in myasthenia
 gravis 4425
 Texas fever 4271
 Thalamyd 4518 4569
 in cholera 4285
 indications for 4570
 Thienylene 4214
 Thephoric 4214
 Thioarsenites 423
 Thiocyanate 4423
 aliphatic as insecticides 4374 4376
 in hypertension 4360
 Thiomerin 4305
 Thiosemicarbazones toxicity 4612
 in tuberculosis treatment schedule 4618
 Threadworm infestation 4539
 Thrombectomy 4531
 Thrombin 4259
 Thrombo-angitis obliterans 4570
 Thrombophlebitis See *Phlebotrombosis*
 Thrombosis 4570
 cerebral, 4581
 coronary 4583
 prophylaxis 4333
 intravascular surgical procedures in, 4572
 predisposing factors 4571
 prophylaxis 4571
 Thrush 4413
 Thymectomy in myasthenia gravis 44 5
 Thymol 4198 4333 4586
 in actinomycosis 4143
 Thyroid neoplasms of 4317
 Tibione 4609
 Tick bite fever 4587
 control 4377
 repellent 4377
 Timofax 4333
 Tinea 4333
 Tobia fever of Colombia 4507
 Tolserol, dosage and uses 4423
 Torantol 4211 4214
 Torulosis 4587
 Totatquine 4597
 Toxaphene as insecticide 4375 4376
 Toxoplasmosis 4588

- Stibophen 4224
 in leishmaniasis 4385
 in schistosomiasis 4517
 Stibosan 4245
 Stilbamidine 4225 4595
 in leishmaniasis 4395
 in multiple myeloma 4266
 evaluation 4434
 Stomach, neoplasms of 4301
 Stomatitis gingival acute 4353
 Stovarsol as trichomonicide 4592
 Streptococcal infections 4333
 sore throat 4538
 Streptomycin in actinomycosis 4142
 in aerogenes infections 4162
 in anthrax 4199
 available products 4539
 bacterial spectrum 4250
 blood coagulation increased with 4139
 in brucellosis 4273
 in chancreoid 4277
 in colon bacillus infections 4290
 fastness dosage and 4134
 in glanders 4346
 in influenza (hemophilus) 4371
 in klebsiellois 4381
 in lupus vulgaris 4390
 in lymphopathia venereum 4392
 ointment 4338
 with PAS 4012
 vs penicillin 4457
 in plague 4467
 in rat bite fever 4490
 in rhinoscleroma 4503
 therapy general measures with 4010
 toxicity antihistamines in 4218
 measures in 4010
 para aminosalicylic acid in 4609
 in tuberculosis 4610
 dosage 4611
 in tularemia 4620
 in verruga peruana 4633
 Streptothricosis 4141
 Strongyloidiasis 4539
 Subtilin in tuberculosis 4609
 Substance FA 4145
 Subtenolin 4201
 Succinylsulfathiazole 4518
 Sucrosum 4104
 Sulamyd 4540
 Sulfadiazine 4546
 in actinomycosis 4141
 in anthrax 4199
 in chancroid prophylaxis 4276
 in cholera 4285
 in listeria monocytogenes infections 4387
 in lymphopathia venereum 4391
 in plague 4467
 Sulfaguanidine 4518
 in cholera 4285
 Sulfamerazine 4546
 in chromoblastomycosis 4288
 Sulfanilamide 4546
 Sulfapyrazine 4548
 in dermatitis herpetiformis 4 99
 Sulfarsphenamine 4232
 Sulfasuxidine 4548
 Sulfathalidine 4548
 Sulfathiazole 4546
 Sulfocyanates in hypertension 4560
 Sulfonamides 4540
 in actinomycosis 4141
 in Aerobacter aerogenes infections 4162
 allergic hypersensitivity and evaluation 4179
 antagonists 4551
 in anthrax 4199
 antihistamines with 4547
 bacterial spectrum 4250 4548
 blood concentration calculation 4547
 in chancroid 4277
 prophylaxis 4277
 in cholera choice of 4285
 comparison with other antibiotics 4542 4545
 fastness 4133 4543
 in glanders 4346
 in gonorrhea 4352
 hypersensitivity reactions 4542
 comparison with other antibiotics 4542
 indications for 4532
 insoluble 4548
 in Listeria monocytogenes infections 4387 4388
 in lymphopathia venereum 4391
 in meningococcal infections 4409
 vs penicillin 4456
 penicillin synergism 4450
 in plague 4467
 in pneumococcal infections 4469
 preparations 4544
 prophylaxis by 4551
 in rheumatic fever evaluation 4490
 in shigellosis 4520
 soluble 4545
 in staphylococcal infections 4531
 synergism 4450
 therapy summary 4543
 topical use evaluation 4544
 in torulosis 4587
 toxicity 4170 4541
 in toxoplasmosis 4589
 as urinary antiseptic 4627
 Sulfones 4552
 in actinomycosis 4143
 bacterial spectrum 4250
 in leprosy 4386
 preparations comparison 4552
 in tuberculosis 4609
 Sulfur 4514
 Sulphethrone 4553

- Suramin 4553 4595
 in African sleeping sickness 4553
 in trypanosomiasis 4594 4595
 toxicity 4554
 Surgical biopsy 4491
 procedures in actinomycosis 4145
 aureomycin in 4215
 in hypertension 4361
 in malignancy 4437
 in myasthenia gravis, 4103
 in phlebotomiasis 4579
 prophylactic antibiotic therapy 4291
 in tuberculosis 4606
 Swimming pool conjunctivitis 4368
 Swineherd's diseases 4631
 Sympathectomy in malignancy 4456
 Sympatholysis 4423
 Syndrome of pa pin 4286
 Syphilis 4554
 false-positive test evaluation 4554
 prophylaxis, 4556
 treatment choice of 4555
 Syrup ammonium mandelate 4400
 Syrup of ferrous iodide 4578
 of hydriodic acid 4578

 TAGATHEX 4218
 Tapeworm infestations, 4561
 Tar 4335 4514
 Tartar emetic, 4224
 in schistosomiasis technic 4518
 TB I-698 See *Conteben*
 T.C.A.P. ointment, 4335
 TDE rhotane 4374 4376
 Tegumentary system neoplasms of 4559 See
 also *Skin*,
 Temperature variations due to menstruation
 ovulation and impregnation 4411
 Teniasis 4561
 Teropertin evaluation 4484
 Terramycin 4562
 bacterial spectrum 4563
 in brucellosis 4274
 in rheumatic fever 4498
 therapeutics, 4443 4563
 toxicity 4563
 as urinary antiseptic 4627
 Test(s) Bial, 4493
 blastomycosis, 4257
 Bolen, 4409
 Borchardt, 4403
 of coagulability 4572
 coccidioidin 4289
 Frei, 4391
 histoplasmin 4557
 for hypersensitivity 4189
 Ito-Reensharma 4276
 Kveim 4513
 Papanicolaou 4450
 Test(s) prothrombin activity 4573
 Rubner 4403
 syphilis false-positive evaluation 4554
 Testosterone propionate 4145 4190
 in mumps 4418
 Tetanus 4364
 antitoxin 4261
 immunization 4364
 prophylaxis 4564
 toxoid 4209
 Tetrachlorethylene 4198 4569
 in ascariasis 4240
 in uncinariasis 4624
 Tetraethylammonium chloride 4122
 in hypertension 4360
 Tetra-ethylpyrophosphate in myasthenia
 gravis 4125
 Texas fever 4271
 Thalamyl 4518 4569
 in cholera 4285
 indications for 4570
 Thenylene 4014
 Thephorin 4214
 Thioarsenites 423
 Thiocyanate 4123
 aliphatic as insecticides 4374 4376
 in hypertension 4360
 Thiomerin 4305
 Thiosemicarbazones toxicity 4612
 in tuberculosis treatment schedule 4618
 Threadworm infestation 4589
 Thrombectomy 4581
 Thrombin 4259
 Thrombo-angitis obliterans 4570
 Thrombophlebitis See *Phlebotomiasis*
 Thrombosis 4570
 cerebral, 4581
 coronary 4583
 prophylaxis 4583
 intravascular surgical procedures in 4572
 predisposing factors 4571
 prophylaxis 4571
 Thrush 4413
 Thymectomy in myasthenia gravis 4425
 Thymol 4198 4333 4586
 in actinomycosis 4145
 Thyroid neoplasms of 4317
 Tibione 4609
 Tick bite fever 4587
 control, 4577
 repellent, 4577
 Timofax 4333
 Tineas 4533
 Tobias fever of Colombia 4507
 Tolserol, dosage and uses 4123
 Torantil, 4211 4214
 Torulosis 4587
 Totaqueine 4377
 Toxaphene as insecticide 4375 4376
 Toxoplasmosis, 4588

- Toxoplasmosis classification 4589
 Trachoma 4589
 Travel sickness dramamine in 4218
 Travelers immunization schedule for 4366
 Trench fever 4590
 Treponematoses 4590
 Trichinella extract 4209
 Trichinosis 4391
 Trichomonas enterocolitis 4591
 vaginitis 4592
 Trichomonicides 4592
 Trichophyton 4209
 Trichuriasis 4593
 Trihexyphenidyl See *Artane*
 Trimeton 4214
 Trisulfazine 4546
 Tromexan 4202
 Tropical chlorosis 4623
 splenomegaly 4385
 Trypaflavine 4595
 Trypanocides list of 4595
 Trypanosoma infections antrycide in 4227
 Trypanosomiasis 4594
 Tryparsamide 4233 4595
 Tsutsugamushi fever 4596
 Tuamime 4158
 Tube feedings of protolyate 4236
 Tuberculin Denys 4609
 new in tuberculosis 4608
 old 4209
 patch test 4209
 Tuberculin type hypersensitivity chronic
 4135 4168
 clinical syndromes 4169
 drugs causing 4157 4170
 pathologic changes 4170
 prognosis 4174
 reactions to therapeutic agents 4157
 in rheumatic fever 4171
 Tuberculin type vs histamine-type hyper
 sensitivity 4171 4172
 Tuberculosis 4597
 clinical manifestations 4600
 diagnosis general principles 4597
 iodide in evaluation 4177
 prophylaxis general principles 4602
 tests in 4598
 treatment general principles 4605
 para aminosalicylic acid 4611
 specific preparations 4607
 streptomycin 4610
 tuberculin test negative management, 4613
 tuberculin test positive management 4614
 4615 4616
 Tuberculosis indurativa subcutanea 4322
 Tubocurarine See *Chondrodendron tomen
 torum*
 Tularemia 4619
 immune serum 4260
 Tularensis vaccine 4209
 Tumors 4126
 of blood and blood forming organs 4262
 brain 4438
 of colon and rectum 4301
 of digestive system 4300
 of endocrines 4316
 of esophagus 4301
 of female reproductive system 4326
 of larynx 4492
 of male reproductive system 4399
 malignant See *Cancer and Carcinoma*
 of nervous system 4438
 of oropharynx 4301
 of respiratory system 4492
 of skeletal system 4522
 spinal cord 4439
 of stomach 4301
 of tegumentary system 4559
 of urinary system 4627
 Typhoid fever 4620
 prophylaxis 4620
 vaccine 4209
 Typhus fever 4621
 prophylaxis 4621
 immune serum 4260
 mite borne 459
 vaccine 4209
 Thyrocidin 4623
 Tyroderm cream 4622
 Tyroscape 4514
 Tyrothricin 4622
 ointment 4333
 in staphylococcal infections 4530
 in streptococcal infections 4535
 therapeutics 4623
 Tyrozets throat lozenges 4623
 ULCERATIVE colitis streptococcus vaccine 4209
 thalamyd in 4570
 Uncinariasis 4623
 Undecylenic acid 4333
 in psoriasis 4483
 Undulant fever 4271
 vaccine 4209
 Urethane in cancer therapy evaluation 4434
 in chronic myeloid leukemia 4264
 in multiple myeloma 4266
 Urethritis gonorrheal prevention 4350
 treatment 4351
 non specific nongonococcal 4625
 Urinary antiseptics 4625
 list of 4626
 mandelic acid 4100
 bladder neoplasms of 4627
 system neoplasms of 4627
 Urine acetone test for 4384
 albumin tests for 4382
 laboratory tests 4382
 occult blood test for 4334

- Urine pigmentary changes in 4628
sugar tests for 4383 4403
Urotropin 4413
Urticaria 4630
Uterus neoplasms of 4327
- VACCINATIONS 4363 See also *Immunization*
BCG 4602
evaluation 4604 4605
results 4603
Vaccines list of 4205
rabies 4487
Vaccinia 4631
Vaginal moniliasis 4414
suppositories 4393
Vaginitis atrophic estrogens in 4325
gonorrheal, penicillin in 4351
Trichomonas 4392
Valley fever 4389
Van der Schuer fever 4298
Varicella See *Chickenpox*
Variola 4523
Venereal prophylaxis 4557
aureomycin in 4247
sulfadiazine 4277
Venezuelan equine encephalitis 4632
Veratrum viride 4424
in hypertension 4360
Vernal conjunctivitis 4632
Verrucous dermatitis 4287
Verruga peruana 4632
Vertebris 4124
in hypertension 4360
Vessel ligation 4581
Vincent's infection 4398
Vinegar as trichomonicide 4592
Vioform 4182 4443 4592
Virus amaril 4638
diseases 4633
dysentery 4634
hepatitis 4635
prevention gamma globulin in 4340
prophylaxis 4635
influenza 4373
pneumonitis 4636
- Visceral angitis 4311 4638
Vitamin D₂ in lupus erythematosus acute 4539
in lupus vulgaris 4390
Vitamin E in habitual abortion 4354
Vitamin K with Dicumarol, 4203
in virus hepatitis 4636
Vitamins water soluble 4239
Vole vaccine 4609
Von Economo's disease 4308
Von Gierke's disease glycosuria in 4407
Vonedrine 4138
- WATKINSON-FRIDERICHSEN syndrome 4408
Weil's disease See *Spirochetal jaundice*
Whipworm 4593
Whitfield's ointment, 4333
Whooping cough See *Pertussis*
vaccine 4209
WIA as amebicide 4182
Wolhynian fever 4590
Woolsorter's disease 4198
- XANTHINES in hypertension evaluation 4360
Xiphosternal crunch 4633
X ray diagnosis in actinomycosis 4141
in Aerobacter aerogenes infections 4161
in malignancy 4432
therapy aureomycin in 4226
in chromoblastomycosis 4288
in chronic lymphatic leukemia 4263
in dermatophytoses 4333
for epilation 4333
in Hodgkin's disease 4265
in malignancy 4435
- YAWS 4330
Yellow fever 4638
immune serum 4260
vaccine 4209
- Zinc undecate 4333

